November, 1957

Brick & Clay Record

LEADING CLAY JOURNAL
OF THE WORLD

BRICK • REFRACTORIES • STRUCTURAL TILE • SEWER PIPE • DRAIN TILE • TERRA COTTA • ROOFING TILE • CLAY AGGREGATE

THE NEW *Additives*

What they are . . . how they work . . . what they can do for your operation . . . how you can use them

A BCR *Exclusive Report*

Whatever You Make in COMMERCIAL CLAY PRODUCTS

BONNOT

can supply dependable equipment

Whether you are modernizing existing lines, increasing capacity or rebuilding present machines, Bonnot can effectively help you meet today's "quantity demands" for quality clay products at competitive prices. Actually, there are . . .

Three major reasons why leading clay products manufacturers *turn first to Bonnot.* Long experience proves that:

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Brick — tile — refractories or clay pipe, whatever your products and requirements, avail yourself of Bonnot's 67-year reservoir of established skill and experience in all phases of designing and manufacturing clay processing equipment that combines *high productivity with low manufacturing cost.* YOUR QUESTIONS WILL GET IMMEDIATE ACTION.

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Special Machines to Order

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CANTON 2, OHIO

Rugged Machines for Constant Low Cost Operation — BONNOT'S the Buy

Broad River Brick Company

GAFFNEY, SOUTH CAROLINA

DIVISION OF GREENVILLE STEEL AND FOUNDRY · GREENVILLE, SOUTH CAROLINA

CUTS COSTS *with*

GIVING BETTER SERVICE

USUPERLITE UNLOADERS

—READ THIS—

"We have been using the Superlite equipped trucks for over a year now and the deliveries of cubed brick have received such a wide acceptance from our customers that we are now packaging our entire production. We believe we have cut our delivery cost by 75 per cent, not to mention the fact that the brick are delivered on the job in much better condition than before. Needless to say, we are very pleased with the performance of our Superlites."

BROAD RIVER BRICK COMPANY, J. D. Agnew, General Manager

FAST-GENTLE **HANDLING!**

BUILDERS EQUIPMENT CO.
3810 N. CENTRAL AVE.
PHOENIX, ARIZONA

FOR COMPLETE INFORMATION
WRITE — WIRE OR TELEPHONE
COLLECT CALLS ACCEPTED

"Brick & Clay Record is published monthly by Industrial Publications, Inc., 5 S. Wabash, Chicago 3, Ill. Subscription price: U. S. A. and Canada, $5.00 per year; three years, $10.00; Foreign subscription price: $7.00 per year; three years, $15.00. Vol. 131, No. 5. Entered as Second Class Matter January 2, 1911, at the Post Office at Chicago, Ill., under the Act of March 3, 1879. Additional entry at Pontiac, Ill.

3-WAY usefulness:

FORK LIFT

Double pallets of tile are hauled from kiln and stacked in storage room with this Kwik-Mix S-10 Moto-Bug fork lift. Load capacity is 1000 pounds — lifting height, 6 feet.

HOPPER

Interchangeable hopper converts Moto-Bug into a 10 cu. ft. power wheelbarrow — hauls bulk materials or finished products — climbs 16% ramps. (15 cu. ft. hopper optional.)

PLATFORM

Change from hopper or fork lift to 4-foot platform, and you have a heavy-duty, ¾-ton truck! (Bigger, R-15 multiple-tool Moto-Bug also available.) Send for latest literature.

KWIK-MIX COMPANY, PORT WASHINGTON, WIS.

Send bulletins on: ☐ S-10 ☐ R-15 Moto-Bug®

NAME_____

COMPANY_____

STREET_____

CITY, STATE_____

KM767 BCR *(A Division of Koehring)*

LETTERS To the Editor

Superlites Omitted

Editor, BRICK & CLAY RECORD — The September issue of BRICK & CLAY RECORD has . . . an interesting article . . . on the Kelsey-Ferguson Brick Co., East Windsor Hill, Conn.

However, I was disappointed to note, after completing the article, that not a single mention was made of the fact that there are 6 Superlite Unloaders handling those packaged brick. Three of them are owned by Kelsey-Ferguson and three by Cummings, Inc., who do hauling for them. Just within the last thirty days Kelsey-Ferguson bought their third unit and Cummings took their third unit.

When Donald Cummings ordered his last unit . . . he told me that the demand for packaged brick and Superlite Unloading was so great that he just had to have a third unit.

A. T. Gumper
Builders Equipment Co.
Phoenix, Ariz.

Ed. Note: We're sorry for the omission of Superlite from the K-F story. These units were mentioned and pictured in the plant operation story in July, 1956. Gumper, by the way, recently had a good-sized story about his work with Builders Equipment in a story in Industrial Marketing magazine.

Lost Markets

Editor, BRICK & CLAY RECORD — I have noted that much emphasis is being put on the present and rising dollar value of the clay products being sold, but little effort is being made to restore to the industry the markets for important products which have been lost during the past few years by lack of proper and efficient promotion and advertising.

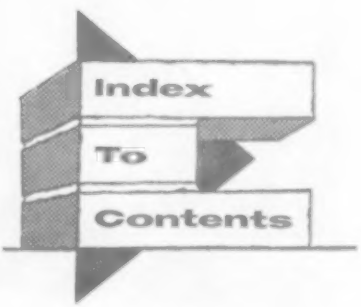
I doubt if you yourself realize that these markets for clay products are gone: paving brick; foundations and retaining walls; three and four-ring brick sewers; inside partition block; fireproofing for steel frame structures and arch floor tile for same; outside curtain walls for steel structures; decorative hand-made terra cotta columns and cornices; wall and floor tile; about half the drain tile and sewer pipe is threatened by cement and plastic substitutes . . . After the Roman occupation, no brick were made in England for a period of some two hundred years. Are we approaching such an era? I sometimes wonder.

It has taken only about 25 years to lose the markets I have given you as lost.

Marion W. Blair
Terre Haute, Ind.

Ed. Note: We're printing the above comments by Mr. Blair, although we have no means given up on these markets, as witness some parts of our special section in the October issue.

For examples, we're about to start a series of articles on wall and floor tile with much of the information relatively new to this country. These products have been a great success in Europe. Further, the new SCPRF panels open new areas of market and construction. Several of the other items mentioned are being worked on in various parts of our industry. We'll concede that some of these products are not all they should be today, but we can't agree that they're dead.



Additive A at Des Moines
Many aspects of plant operation improved with use of new Additive A 48

Brickaid at United B&T
A complete report on the remarkable benefits shown in production use of this new product at two United plants 56

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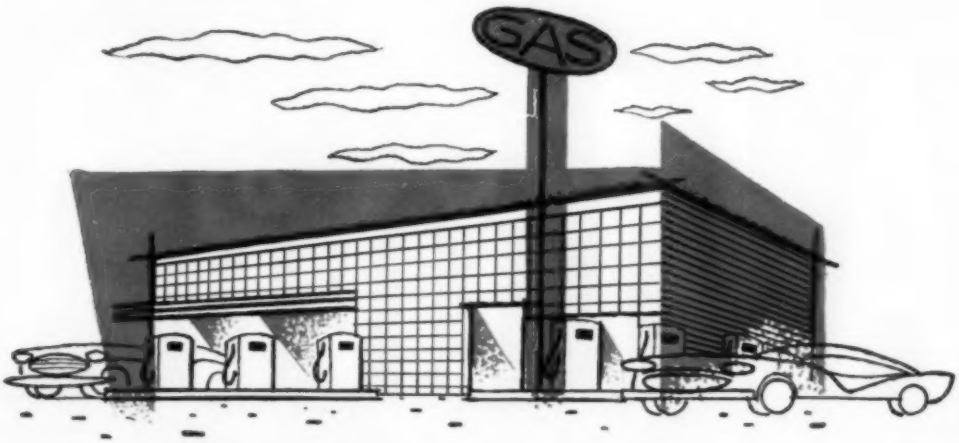
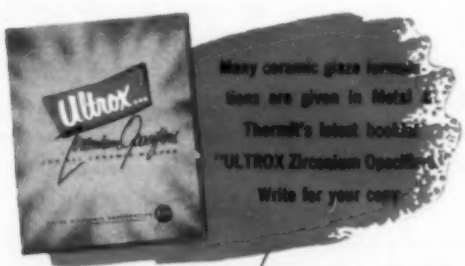
Ultrox BRICK AND TILE GLAZES are formulated for quality



Glazes used for structural brick and tile call for top quality glaze constituents. That's why Ultrox® Zirconium Opacifiers are selected wherever glaze specifications demand uniformity in color and texture, stability at specific glaze maturing temperatures, maximum opacity at minimum cost, and other desirable properties.

Since ceramic glazes are affected by the composition of the bodies to which they are applied and the firing conditions to which they are subjected, standard glaze formulations may need to be modified for the best results. Metal & Thermit's technical service department has developed hundreds of such formulations and adapted them to specific body compositions and firing conditions. We will be glad to help on your formulation or ceramic glaze problems, too. Just write, or give us a call.



Many ceramic glaze formulations are given in Metal & Thermit's latest booklet "ULTROX Zirconium Opacifiers". Write for your copy.

METAL & THERMIT CORPORATION

GENERAL OFFICES: RAHWAY, NEW JERSEY

METAL & THERMIT—UNITED CHROMIUM OF CANADA, LIMITED • REXDALE, ONT.

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GLAZE OPACIFIERS: Ultrox® Ultrox 500W Tin Oxide

ENAMEL OPACIFIERS: Antimony Oxide Sodium Antimonate Zirconium Silicate

CERAMIC GRADE RUTILE

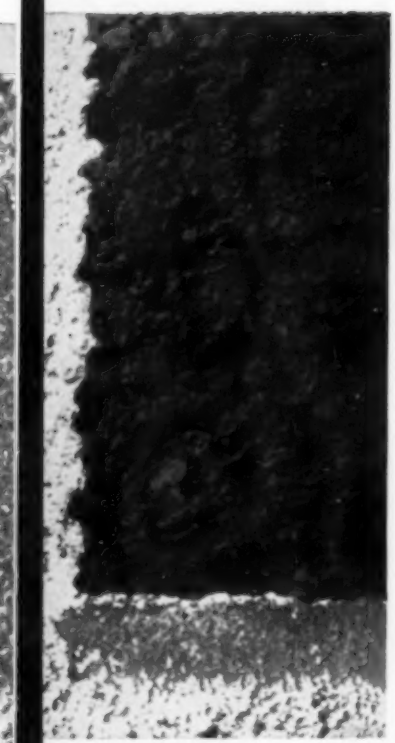
ADDITIVES FOR BARIUM TITANATE DIELECTRICS

Crystalline Stannates of Bismuth, Lead, Calcium, Magnesium and others

From Kimberly-Clark Research

KIMBERLY-CLARK Additive A is a new liquid clay conditioner easily added to the tempering water with multiple benefits in brick, structural clay products and clay pipe production. It greatly improves plasticity and strength, results in more efficient production, higher yields and more profitable operation.

Kimberly-Clark Additive A is the result of six years of laboratory experimenting and three years of plant testing. It is a field-tested product now being used to advantage in the production of millions of brick and tile.



A complete clay conditioner with all these wanted benefits

- Increases plasticity and promotes even temper.
- Body lubrication reduces lamination.
- Increases life of augers, dies and liners.
- Promotes even flow through the die with reduced power consumption.
- Increases wet green strength. Ware is more easily hacked without damage.
- Allows faster drying at higher temperatures yet markedly reduces drier cracks.
- Permits block or package setting.
- Produces cleaner, brighter colors.
- Less shrinkage—more uniformity in size.
- General upgrading of all ware.

Kimberly-Clark Corporation, Neenah, Wisconsin

CHEMICAL PRODUCTS DIVISION

here's the NEW HD-21...

DESIGNED AND BUILT TO FIT

Now . . . major advances make the Allis-Chalmers HD-21 more productive than ever . . . capable of handling big-tractor jobs of every kind with the efficiency and dependability all open pit operators want and need.

New 225-net-hp turbo-engine

New weight—45,500 lb (bare)

New power train and torque converter effectiveness, simplicity

New longer track for matched traction, flotation

New operating ease and control with work-saving decelerator

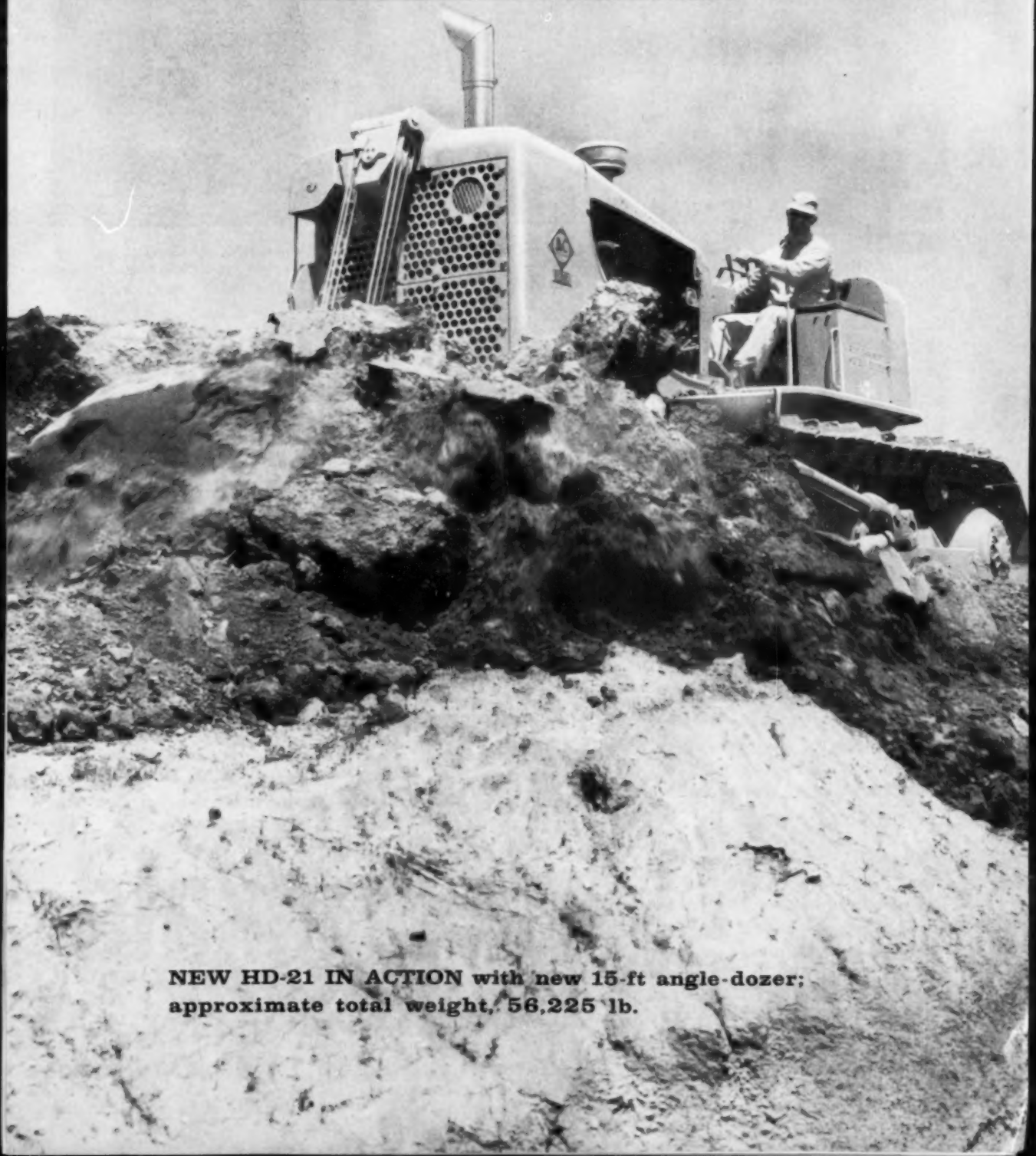
New heavy-duty matched dozers

Here's a big tractor you can depend on to help you on a wide range of stripping and maintenance jobs. Your Allis-Chalmers dealer will be glad to talk to you about the new "21" . . . and to prove its value in a working demonstration on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action

TODAY'S BIG-TRACTOR JOBS!



NEW HD-21 IN ACTION with new 15-ft angle-dozer; approximate total weight, 56,225 lb.

"The solid appearance of these bricks is due largely to Spencer BRICKAID," explains W. C. Francis, Plant Superintendent of United Brick and Tile Company, to W. C. Bull, Spencer research scientist. Besides boosting production, BRICKAID reduces chipping and dryer cracking. Read complete story below:

"How We Boosted Brick Production In Tunnel Kiln By 5,000 Bricks Per Day"

BRICKAID, Spencer Chemical Company's new brick additive, virtually eliminates black coring, can reduce firing time up to 25% where black coring is the limiting factor:

"The problem of black coring has almost disappeared since we began using Spencer BRICKAID," declares W. C. Francis, Superintendent of United Brick and Tile Company's Vale, Missouri plant. United has recently completed nine months of intensive scientific tests with BRICKAID, the new brick liquid additive developed by Spencer Chemical Company after two years of research.

"BRICKAID cuts firing schedules, too," says Francis. "We cut ours from 80 to 70 minutes, and we believe we could have cut our time schedule more if needed. As it was, we boosted our daily brick production by 5,000 through faster firing schedules. Our bricks had greater green strength, a great advantage in handling. With BRICKAID, too, we can fire difficult shapes—especially large solid masses—that we couldn't handle before."

BRICKAID is non-inflammable and non-explosive. It's also non-corrosive when added at the usual rate to pugmill water. Francis reports no corrosive effects on Vale equipment resulting from use of BRICKAID.

BRICKAID now costs 30c a gallon (40c west of the Rockies). A gallon is enough for a ton of clay.

For more information about BRICKAID write Sales Manager, Chemicals; Spencer Chemical Co., Dwight Bldg., Kansas City 5, Mo.

SPENCER **Brickaid**

BRICK ADDITIVE

(A process patent on the use of BRICKAID is now pending.)

SPENCER CHEMICAL COMPANY • DWIGHT BUILDING • KANSAS CITY 5, MO.

NOW! YALE G-3 GAS TRUCKS...

WITH FULLY AUTOMATIC TRANSMISSION

GIVE INSTANT POWER FOR SMOOTHER, FAST-CYCLE HANDLING

Automatic Power Control. Full power the instant it's needed for fast starts or climbing grades...for accurate inching while lifting capacity loads at 60 feet a minute. Loads are spotted fast!

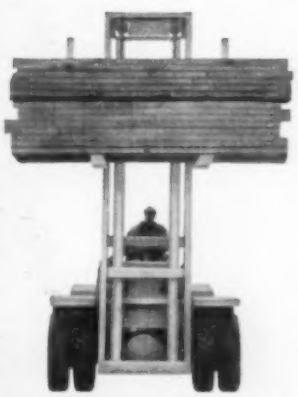
Fast-Cycle Operation. Maximum maneuverability in tight areas. Power steering. Power brakes. Separate inching control. No clutch pedal or shifting of gears. Travel speeds up to 20 MPH. Result: more trips per hour, more volume per day.

Greater Stability. Automatic transmission for smooth starts and travel. Low center of gravity with high underclearance. Fast, controlled lowering. Broad lifting base and side-thrust rollers for extra stability. H-beam side members in frame for extra strength. Large, high-flotation pneumatic tires give good traction anywhere.

Yale G-3 Series High-Capacity Gas and LP-Gas Trucks are designed for attachments, engineered for minimum loss distance. Also available with Fluid Coupling or standard transmission.

EXCLUSIVE YALE "WIDE-ANGLE VISION"

300% more visibility than any other truck of its type! Wide spacing of channels, lifting chains and hoisting cylinders, and open-design carriage give maximum forward visibility *plus* wide arc of vision for fast, safe handling of big loads.



CAPACITIES: 15,000 to 20,000 LBS.

YALE*

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INDUSTRIAL LIFT TRUCKS AND HOISTS

The Yale & Towne Mfg. Co., Yale Materials Handling Division
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Please send me brochure No. 5230A about the new Yale High-Capacity Gas Trucks.

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Industry
NEEDS DEPENDABLE
NOURISHMENT too!
Take a tip from your family's dependence on "nature's most nearly perfect food". Coal is nature's most nearly perfect fuel. It's here in abundance for ages to come, a dependably low-cost and most efficient source of "go power"! It's convenient too —right on Industry's doorstep.
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another BESSER contribution to the concrete block industry

technical courses conducted by competent instructors offered FREE to all qualified block plant personnel

• Courses include lectures, demonstrations and do-it-yourself training in the selection, gradation and mixing of aggregates . . . Laboratory analysis of materials . . . The functions, adjustments and operation of the Besser Vibrapac . . . Preventative Maintenance . . . Electrical and mechanical adjustments . . . Methods of loading, unloading, curing and cubing block . . . The proper use of concrete block . . . etc.

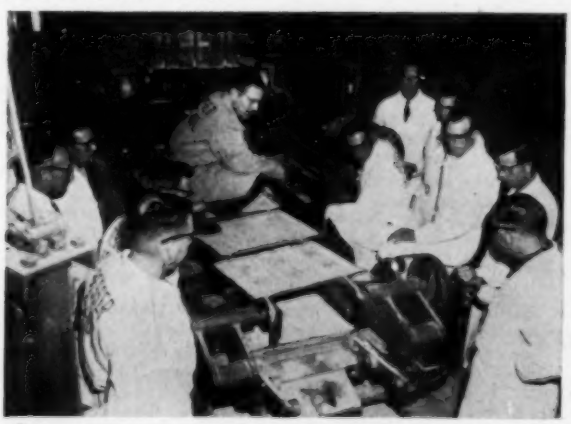
• Your goal is to make better concrete block . . . faster . . . at the lowest possible cost. The Besser Company, through its School for Blockmakers, is anxious to help you reach that goal. The School . . . the only one of its kind in the industry . . . was organized to train blockmakers and to help solve the many problems encountered in the operation of a block business. Competent instructors, carefully chosen for their training and experience, convey technical know-how to the students and give them a more practical, everyday plant operational outlook. There is no tuition fee. The courses are offered FREE to all qualified block plant personnel. Yes, even men from block plants not operating Vibrapac machines are welcome to attend the School. For complete enrollment data and additional information write:

BESSER COMPANY **Dept. 139, ALPENA, MICH., U. S. A.**

First in Concrete Block Machines

• Typical class in the Besser School. Lecturer explains the electrical control box of the Besser Vibrapac.

• Students in Materials and Methods Class, quartering, weighing, screening and analyzing aggregates.



• Mechanical Session — Checking proper adjustment of Besser Vibrapac.

• Class in "Concrete Masonry and Its Proper Use" with instructor demonstrating the selection of the right block for its best use in the wall.

• J. H. Besser, President of Besser Company, presenting Certificate of Attendance to S. K. Narayana, Government of India, as Class President, Ivan Newport, Pre-Cast Concrete Products, Long Beach, California, looks on.

A7-139

Materials Equipment Services

INSULATING FIREBRICK—A new bulletin is available giving basic facts about IFB, its advantages in regular and salt glazing periodic kilns, and economies that can be expected. Bulletin R-43, Babcock & Wilcox Co., 161 E. 42nd St., N.Y.C. 17.
738/Circle on Reader's Service Coupon

PALLET CLEANERS — Besser says their pallet cleaners do not warp or nick pallets. Machine compensates automatically for differences in pallet thickness, gets down to bare steel. Cleans up to 300 pallets per hour. Bulletin 101. Besser Company, Alpena, Michigan.
739/Circle on Reader's Service Coupon

HAMMERMILLS—If you have a crushing problem, American's engineering department will be happy to analyze your reduction trouble, make test runs if necessary, and offer specific recommendations — at no obligation to you. American Pulverizer Co., 1061 Macklind Ave., St. Louis 10, Mo.
740/Circle on Reader's Service Coupon

LOADERS — International's Drott claims to apply hydraulic force to full piston face instead of just the rod-end area, have greater leverage, and ground-based fixed fulcrum. Company says this adds up to heavy duty loader design that "separates the men from the boys." International Harvester Co., Drott Mfg. Corp., Milwaukee 15, Wisc.
741/Circle on Reader's Service Coupon

V-BELTS—Gates claims you can cut sheave width and weight by using their Super Vulco Drives. Company says 5 of their ropes will do the work of 7 standard V-belts; that inner resilient cords give 40% more HP capacity. Gates Rubber Co., Denver, Colo.
742/Circle on Reader's Service Coupon

MAXIMULLER — has revolving pan with screen plates in the pan bottom, with large mullers, widely spaced for greater crushing effect. Bulletin B-53. Clearfield Machine Co., Clearfield, Pa.
743/Circle on Reader's Service Coupon

COMBINED MACHINES — Model 60F combines the compactness of a combined de-airing machine with the convenience of separate drives. Double geared drives for both extrusion and pugging (in 11"-x 30" ID open pugmill). Claimed to give 100,000 to 140,000 brick per 8-hour day. J. C. Steele & Sons, Statesville, N.C.
744/Circle on Reader's Service Coupon

PLANT DESIGN—Hendryx designs face brick, sewer pipe and refractories plants as well as dryers, tunnel kilns and general improvements. Dwight B. Hendryx and Assoc., 6621 Darlington Rd., Pittsburgh 17, Pa.
745/Circle on Reader's Service Coupon

VIBRATORS—Air or electric, portable or permanent, silent or standard Cleveland has vibrators they claim will help you handle sand, clay or refractories. Cleveland Vibrator Co., 2872 Clinton Ave., Cleveland 13, Ohio.
746/Circle on Reader's Service Coupon

TOOL STEEL — High vanadium (4½%) tool steel is used in liners, die plates, brand plates, regrinding service, liner holders, mold boxes, pads, shims and flat ground tool steel. Alcon Production Tool Co., 579 Baird St., Akron 11, Ohio.
747/Circle on Reader's Service Coupon

FORK LIFTS—Reconditioned fork lifts are guaranteed to be as good as new by Memphis Equipment. 2,000 to 15,000-lb. models with solid or pneumatic tires; any size and lifting height, famous makes. Memphis Equipment Co., 766 S. 3rd St., Memphis, Tenn.
748/Circle on Reader's Service Coupon

GRINDER—Air pressure cylinders are exclusive Chambers features which are claimed to give exact pressure control. Two to each muller, they exert a range of pressure from less than deadweight (if desired) to 10 tons per muller. Chambers Bros. Co., 52nd and Media Sts., Philadelphia 31, Pa.
749/Circle on Reader's Service Coupon

CONSTRUCTION NEWS — Dodge Reports give information of who's going to build what, when and where. You can pick the areas and type of construction activity that interests you—lets you know whom to contact and when to submit bids. F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.
750/Circle on Reader's Service Coupon

ULTROX—A specially prepared zirconium opacifier, Ultrox helps to maintain uniformity of color and texture; every batch is carefully controlled for purity and particle size, fire-glaze tested to assure high quality in your production of glazed brick and tile at less cost; can be used for all ceramic glaze applications. Metal & Thermit Corp., Rahway, N. J.
751/Circle on Reader's Service Coupon

SCREENS—The Hummer screen with Ty-Electric heater screens damp clay efficiently. The W. S. Tyler Co., Cleveland 14, Ohio.
752/Circle on Reader's Service Coupon

TRACTOR-SHOVEL — A 100 HP Diesel with torque-converter drive develops up to 24,000 lbs. of "crowding power" for digging in the new 2 cu. yd. Case Terra-Trac Model 1000. Counter-rotating Terra-matic transmission is said to turn and maneuver faster. J. I. Case Co., Dept. G1367, Racine, Wisc.
753/Circle on Reader's Service Coupon

GLAZED BRICK & TILE—Hommel glaze frits and body, engobe and glaze stains are made to meet all requirements, with wide firing range and stability at high fires. Dept. BCR-757 The O. Hommel Co., Pittsburgh 30, Pa.
754/Circle on Reader's Service Coupon

LIFT TRUCKS—Harbison-Walker Refractories of Pittsburgh has reportedly saved many time-consuming operations with 9 Hyster lift trucks—replacing such hand operations as hauling brick from drying tunnel to kiln, returning empty racks to plant, and delivering bricks for inspection and storage. Hyster Co., Portland Oregon.
755/Circle on Reader's Service Coupon

COMBINED MACHINES—No. 404-A is a medium capacity model that is reported to be capable of pugging, de-airing, and extruding every type of brick, block and tile, all in a single operation. American Clay Machinery Div. of Huber-Warco Co., Marion, Ohio.
756/Circle on Reader's Service Coupon

HAMMERMILLS—Williams claims: finish grinds bank run clay and shale in a single operation—including hard lime particles, iron pebbles, tailing of all kinds. Company says 75% of capital investment is saved by eliminating primary or secondary crushers, and 50% of production costs. Williams Patent Crusher & Pulverizer Co., 2709 N. Broadway, St. Louis 6, Mo.
757/Circle on Reader's Service Coupon

SEWER PIPE GLAZES—Pemco offers to take pieces of your dried unfired clay pipe and tailor a glaze for your sewer pipe. Why ceramic glazing? Pemco says it lowers fuel costs, increases refractory life, speeds production, and gives a product with greater sales potential. Pemco Corp., Customer Service Dept., Baltimore 24, Md.
758/Circle on Reader's Service Coupon

SCREEN PLATES — and grate bars by Mallix are made from a specially heat-treated material. Tough, but not brittle, they are said to stand up under severe service without breaking. National Malleable and Steel Casting Co., Cleveland 6, Ohio.
759/Circle on Reader's Service Coupon

HYDRAULIC DRILLS — Parmanco Model HV-172 vertical drill has 65 HP motor, finger-tip control, four-speed auger and Timken bearings. Company says samples can be obtained up to 100 feet deep in minutes. Paris Manufacturing Co., Paris, Ill.
760/Circle on Reader's Service Coupon

BARIUM CARBONATE — Ozark Grade 50F Barium Carbonate is claimed to flow freely for effective control of scum and efflorescence. High 99.1% purity produces high reactivity. Technical bulletin available. Sherwin-Williams Co. Pigment, Color, & Chemical Div., 300 W. Lake St., Chicago 6, Ill.
761/Circle on Reader's Service Coupon

MOTO-BUG — Model S-10 is a fork lift with 1000 lb. capacity, lifting height of 6 feet—or, with the interchangeable hopper, a 10 cu. ft. power wheelbarrow, able to climb 16% ramps—or, with 4-foot platform, a heavy duty ¾-ton truck. Kwik-Mix Co. Div. of Koehring, Port Washington, Wisc.

762/Circle on Reader's Service Coupon

SCREENS—Leahy screens eliminate bothersome flexible connectors. Instead, multiple runs of highly-conductive bus bars permanently connected to screen jacket mounting remove the possibility of connections breaking. Deister Concentrator Co., 913 Glasgow Ave., Ft. Wayne, Ind.

763/Circle on Reader's Service Coupon

KILN CARS—can be moved easily with the Gravely LS Tractor. Low speed, 5 HP, yet powerful enough to move loaded cars up to 310,000 lbs. Gravely Tractors Inc., Box 65, Dunbar, W. Va.

764/Circle on Reader's Service Coupon

BRICK FORKS—Bickerstaff offers to supply detailed information on the use of Bickerstaff forks for mechanical setting of kilns—without obligation. Bickerstaff, Inc., Columbus, Ga.

766/Circle on Reader's Service Coupon

GRAY & DARK RED — The demand for these shades of brick is going up. Write to National for information on turning buff and light clays to gray and red to dark red, black and gun metal. National Paint & Manganese Co., Lynchburg, Va.

767/Circle on Reader's Service Coupon

DRYER CARS — Chase's bearings are claimed to be dust proof, oil retaining—flexible boxing with roller bearings. Steel liner is renewable—construction is sturdy. Chase Foundry & Mfg. Co., 2300 Parsons Ave., Columbus 7, Ohio.

768/Circle on Reader's Service Coupon

GLOVES — Tufthorse heavy split cowhide gloves avoid costly injuries to workers' hands. Samples sent. Des Moines Glove & Mfg. Co., Des Moines, Iowa.

769/Circle on Reader's Service Coupon

MASONRY WALLS—Get better design, rigid lasting qualities with Dur-O-wal patented steel reinforcing for masonry walls. More than 8,000 dealers to supply you. Dur-O-wal Div., Cedar Rapids Block Co., Cedar Rapids, Iowa.

765/Circle on Reader's Service Coupon

CLAY MACHINERY — Disintegrators, winding drums, soft mud brick machines, mould sanders, pugmills, roll crushers, granulators and sand dryers—Potts facilities are available for quick processing of your order. C.&G. Potts & Co., Indianapolis, Ind.

770/Circle on Reader's Service Coupon

CHEMICALS—TC-Hydro, a concentrated Sodium Hydrosulfite is now shipped from the heart of the southern clay products industry, making overnight truckload service possible to most of the south. Small lots from centrally located warehouses. Dependable supply, high quality. Tennessee Corp., 617 Grant Bldg., Atlanta, Ga.

771/Circle on Reader's Service Coupon

STEEL STRAPPING—The Schneider Brick & Tile Co., working with Acme Steel Strapping, has developed a method of packaging brick on jigs which is claimed to simplify inventory, improve storage and speed up loading and delivery. Acme Steel Co., Chicago 27, Ill.

772/Circle on Reader's Service Coupon

PACK HAULER—Cuts delivery costs and saves time too. Owners from all over the country report substantial savings on delivery costs. This unit can be mounted on any standard truck of sufficient capacity, and it is possible that your present fleet can be converted. Load is picked up under positive control at all times. No pallets or strapping is necessary. American Truck & Body Co., P. O. Box 1391, Martinsville, Va.

773/Circle on Reader's Service Coupon

KILN CARS—McNally Pitt built to your specifications with special heat-resisting iron, properly stress relieved. No lubricant is needed on cold rolled steel axles which are cleaned by compressed air. McNally Pittsburg Mfg. Corp., Pittsburg, Kan.

774/Circle on Reader's Service Coupon

How to Get Rush Information

If you want further information or literature describing the products in this special feature, just use the handy card you will find on page 18. Our Reader's Service Dept. will see that you obtain the requested information as quickly as possible.

SCREENS—A new electrical screen-heating arrangement is reported to boost output by as much as 50% with open mesh, and produce a better, more uniform product. Write for Book 2377-A. Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

775/Circle on Reader's Service Coupon

HARDSURFACING — Abrasoweld and Faceweld can handle 9 out of 10 hard surfacing jobs yet is reported to cost less to buy. For hardsurfacing of muller knives, conveyor worms, crusher rolls, shafts. For severe impact and moderate abrasion, use Abrasoweld: for severe abrasion and moderate impact, Faceweld. Lincoln Electric Co., Cleveland 17, Ohio.

776/Circle on Reader's Service Coupon

CONES—Accurate checking on the maturation of ware during the high fire stage of the firing cycle reportedly can be obtained by placing cones throughout the setting. Their deformation provides a means for control of the firing progress. Edward Orton Foundation, 1445 Summit St., Columbus 1, Ohio.

777/Circle on Reader's Service Coupon

TRUCK CRANE—Handles brick or block unpalleted or palleted or packaged, unloading off either side of the truck. Driver alone can unload truck. Unit supplied ready to mount on your trailer. Bradley Machine Co., Inc., Middleton, N. Y.

778/Circle on Reader's Service Coupon

HAMMERMILL — One manufacturer reportedly paid for his American Hammermill in less than six months' operation at the current market price of Haydite, by crushing culled Haydite blocks into reusable material. American Pulverizer Co., 1061 Macklind Ave., St. Louis 10, Mo.

779/Circle on Reader's Service Coupon

LIFT TRUCK — Allis-Chalmers builds its own engines—gasoline, diesel and gas—for its Buda Division trucks. 85 percent of the parts are reportedly interchangeable and the engine can be properly overhauled without removal from the truck. Buda Division, Allis-Chalmers Co., Milwaukee 1, Wis.

780/Circle on Reader's Service Coupon

AXIAL FLOW FANS—A complete new line of axial flow fans has been announced by Westinghouse. Volumes from 1,700 to 100,000 CFM . . . static pressures up to 3¼" . . . 14 sizes, Vaneaxial or Tube axial, direct connected or V-belt driven, with wheel diameters from 15 to 72". Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston 36, Mass.

781/Circle on Reader's Service Coupon

COLOR BRICK—Thinking of color? Write Ferro, describing your equipment, firing ranges, type of clay and proposed method of applying color. Ferro makes colors for glazing, body staining, engobe, and sandblasting. Ferro Corp., Color Div., 4150 E. 56th St., Cleveland 5, Ohio.

782/Circle on Reader's Service Coupon

BUILDINGS—Stran Steel buildings have unobstructed floor space which makes them suitable for the clay industry. Clear-span structures are available in widths of 40, 50, 60, 70 and 80 ft. and multiples thereof. Stran-Steel Corp., Detroit 29, Mich.

783/Circle on Reader's Service Coupon

LANCASTER MIXER—Employs a clockwise rotating pan, counter-clockwise rotating tools, and balanced mulling action for rapid uniform batch mixing. Automatic cycling of the mixing operation is available through the Panel Board Control System combined with water metering and spray equipment. Posey Iron Works, Inc., Lancaster, Pa.

784/Circle on Reader's Service Coupon

BRICK & TILE—Compact F-R-H Type 7 Junior is said to conserve floor space yet turn out up to 20 tons of hollow green ware per hour. Double-shaft pugmill with multiple blade shredder is said to eliminate variables. Write Dept. B-1, Fate-Root-Heath Co., Plymouth, Ohio.

785/Circle on Reader's Service Coupon

Another **STANLEY STEEL STRAPPLICATION*** on the job

Here's a brick package that "shrinks" for easier handling on the job!

A manufacturer in Georgia wanted to simplify and accelerate the movement of brick by mechanical handling from kiln to customer, yet assure equally efficient movement at the job site where manual handling was necessary. The Stanley "Uni-Pac" pictured above proved the answer. 3 bands of steel strapping applied over corrugated board make a 250-brick unit for storing, loading and unloading a maximum number of bricks in minimum time.
At the job site, the "Uni-Pac" is disassembled – just by cutting the corrugated board – and becomes 3 smaller individually strapped units for handy, quick, one-man handling.

Stanley "Uni-Pacs" can be of any size . . . job-tailored to your needs by The Stanley Steel Strapping Specialist. And he can provide the hand or power tools for applying the strapping as efficiently as possible. Most tools are obtainable on a free-trial basis.

WRITE FOR YOUR FREE COPY of the "Stanley Strapplication Manual of Packaging and Shipping" to **STANLEY STEEL STRAPPING**, Division of The Stanley Works, Dept. K, 1146 Lake Street, New Britain, Connecticut.

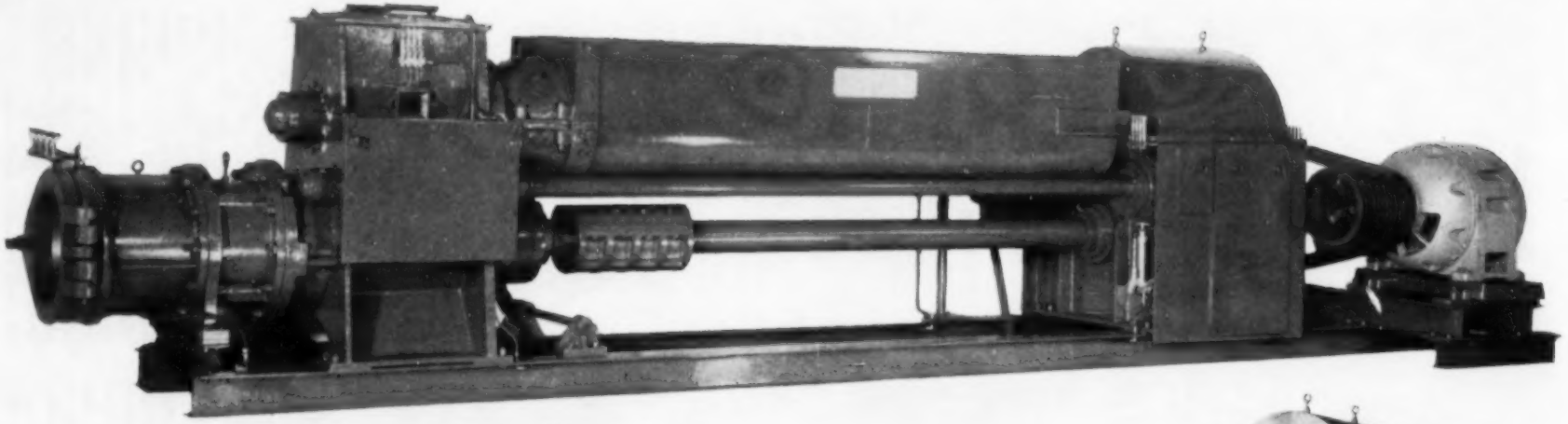
**The system-atic way to solve specific packaging and shipping problems*

INSURE IT-SECURE IT WITH STANLEY STEEL STRAPPING

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • drapery, industrial and builders hardware • door controls • aluminum windows • metal parts • coatings • steel and steel strapping—made in 24 Stanley plants in the United States, Canada, England and Germany



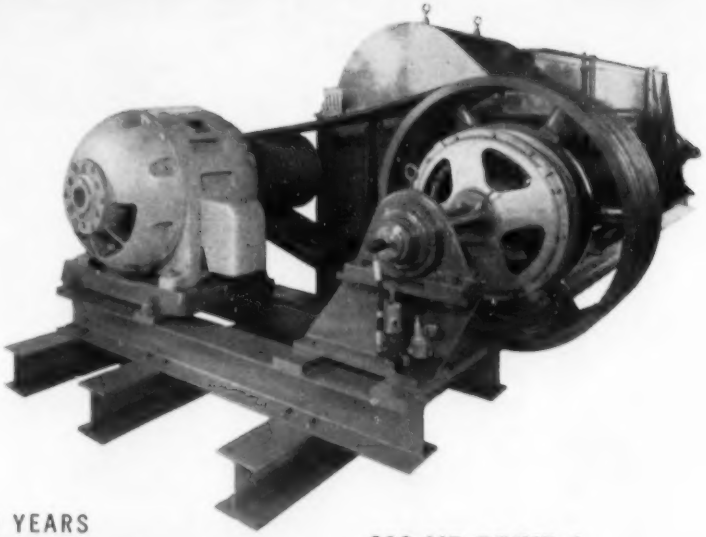
New Chambers

"Probably the best combined machine we have ever made . . ."

Built with modern materials new to the field, and with refinements to match 1957 engineering techniques, this great new Chambers machine reflects the experience of tunnel-kiln operations, where breakdowns are intolerable. Shafts and gears are high alloy, 150,000 psi, steel; all barrel sections, adaptor and die holder are solid steel. All gears helical-cut, flame-hardened steel, with a double reduction of Approx. 12:1. Centralized lubrication.

18¾" auger, fed by 21" augers in vacuum case. 12' pug mill tub. Point augers can taper to 16" or 13". Write for further details.

No. 12 AC HI-POWER



200 HP DRIVE & FAWICK AIRFLEX CLUTCH

Drive has short, efficient V-belts. Main clutch remote controlled; separate pug mill clutch. Totally self-contained mounting. Motor options up to 300 HP.

SERVING YOUR INDUSTRY FOR 100 YEARS

CHAMBERS BROTHERS CO. 1857 1957

52nd & Media Streets · PHILADELPHIA 31, PA.

Please say "I saw it in B&CR"

NEW equipment

THE LATEST IN SUPPLIER DEVELOPMENTS

Shear Hub Sprocket

Murray Equipment says that engineers and maintenance men who have sheared a pin waiting for delivery will want to check into stock Tork-Trol Shear-Hub Sprockets. Sprockets are of all-steel construction, with bronze-bushed sprocket and drill-rod shear pins in hardened bushings. Entire assembly is compact; unbreakable. Murray Equipment Co., 14011 Oakland Ave., Detroit 3.

786/Circle on Reader's Service Coupon

Interchangeable Cab

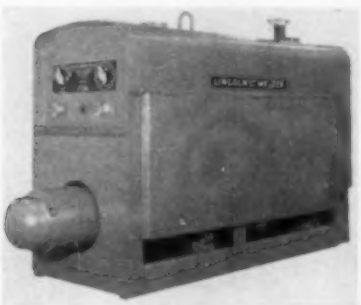
Clark has introduced a new cab that is interchangeable among four models of the company's line. Reason for interchangeability is said to be to reduce the number of cabs necessary

where different models operate outdoors on irregular schedules. Rigid construction and integral overhead guard are advantages reported by Clark Equipment Co., Battle Creek, Mich.

787/Circle on Reader's Service Coupon

200 Amp. Welder

A new model of the 6090, 200-amp, gasoline engine driven portable arc welder of Lincoln Electric is now in production, with the model called the K-6090. The new welder is NEMA



rated 200 amps at 40 volts and 60% duty cycle; has dual controls for generator output; an electrical outlet providing 1 KW of auxiliary DC power and other features. Lincoln Electric Co., Cleveland.

788/Circle on Reader's Service Coupon

Radial Wheel Fan

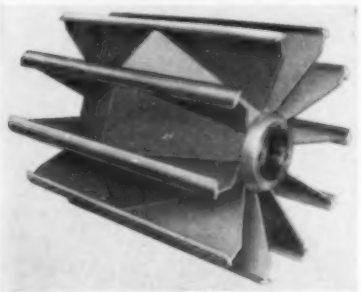
A new radial blade fan by Buffalo Forge has high-volume, high pressure characteristics that reportedly make lower first cost possible. Called the type CR fan, it is claimed to offer high mechanical efficiency — above 78% — over a broad range. Buffalo Forge Co., Buffalo, N. Y.

789/Circle on Reader's Service Coupon

Bottom Dump Trailer

A bottom dump trailer is now in production by Athey with 40-ton capacity trailer, called the PW20. The trailer is made of T-1 steel, a special high-strength, high-alloy steel. Capacity of 80,000 lbs. is almost four times trailer weight. The unit also features exclusive rear (or 3rd door) design. Athey Products Corp., Chicago, Ill.

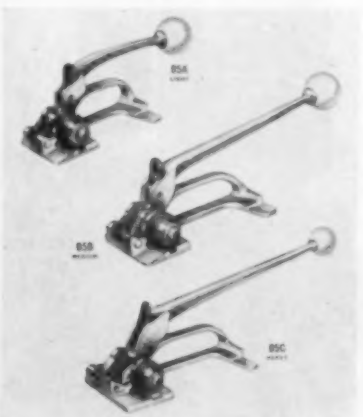
790/Circle on Reader's Service Coupon



Self-Cleaning Pulleys

Steel self-cleaning conveyor pulleys have been added to the product line of Van Gorp. They're available in many standard sizes, from 8 to 60" diameters; from 8 to 66" face widths; from ½ to 10" in bore sizes. The self-cleaning cone is reported to eliminate any material build-up between belt and pulley, thus preventing belt misalignment. Pulleys use Dodge Taper-Lock bushings. Van Gorp Mfg. Co., Pella, Iowa.

791/Circle on Reader's Service Coupon



Strap Stretcher

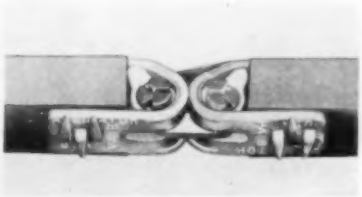
A new, lightweight steel strapping tool is reported to provide faster, easier tensioning of steel strapping, according to the manufacturer. Despite lightness, the tool is reported to be rugged and versatile; precision balanced so that strap can be applied with ease from any direction with the tool in any position. Available in light, medium or heavy duty models. Acme Steel Co., Chicago, Ill.

792/Circle on Reader's Service Coupon

Hyster Power Steering

Power steering for the Hyster series of trucks in the 3000, 4000 and 5000-lb. capacity range is now available as optional equipment. These three trucks comprise the new line released by Hyster last fall. A full range of other options, attachments and accessories is available. Hyster Co., Portland 8, Ore.

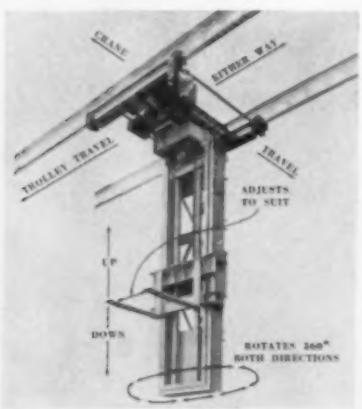
793/Circle on Reader's Service Coupon



End Plate Fasteners

Alligator aluminum end plate fasteners, made of aluminum alloy, are now available for high speed drives. Because these fasteners are claimed to reduce belt whip, when belt speed is high, internal working parts have longer life. Flexible Steel Lacing Co., Chicago 44, Ill.

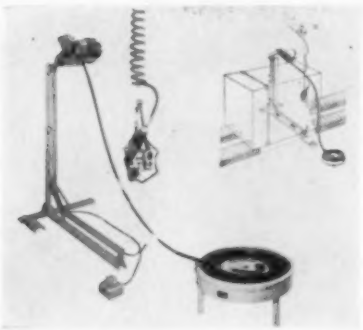
794/Circle on Reader's Service Coupon



Overhead Fork Lift

A new, heavier overhead fork lift has been developed by Cleveland Tramrail. The unit is reported to be more versatile, able to travel to front, rear or either side of a building; up, down, or turn through a full circle either clockwise or counterclockwise. The fork lifts are available with various capacities and lifts. Cleveland Tramrail Div., Cleveland Crane & Engineering Co., Wickliffe, Ohio.

795/Circle on Reader's Service Coupon



Power Strap Feeder

The Signode PSF-1 Power Strap Feeder is reported to rapidly and easily feed strapping vertically around packages; reduces operator fatigue; allows units to be strapped by only one man, eliminating the need for a helper. The unit feeds up to 240 ft. of strapping per minute, providing high strapping speeds. The Feeder is highly flexible and can be mounted on a conveyor or set up as a separate strapping station. Powered by ¼ HP electric motor, it comes with a foot switch as the only electrical control needed. Adjustable to various sizes of strap. Signode Steel Strapping Co., Chicago 47, Ill.

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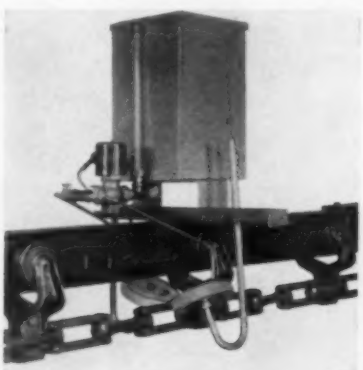

Conveyor Oiler

Pictured here is a new automatic oiler for conveyor chain links and pins, that applies an even film of oil by direct contact of oil-carrying felt rollers. Reported to be no mist, spray or drip, unit can be used with all chain-type conveyors. The rollers apply an oil film to each side of top of chain simultaneously. Olsen Mfg. Co., 638 S. Rochester Road, Clawson, Mich.

797/Circle on Reader's Service Coupon

Adjustable Speed Drives ..

Addition of 2 "C" Groove adjustable speed drives to the line of standard similar drives has been announced by American Pulley. The company reports that the new drives have been made possible by the greater horsepower-transmitting capacity of Super-Service Wedgebelts; that two "C" belts can be more economical than 4 or 5 "B" belts when driving in the horsepower range of 15-20 HP and motor speeds of 1160 and 1750 rpm. American Pulley Co., Philadelphia 29, Penna.

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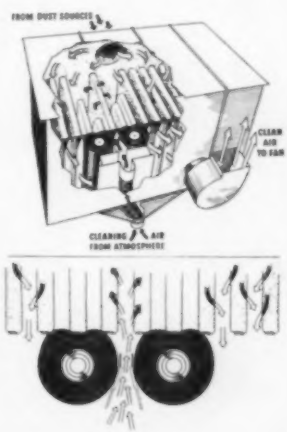
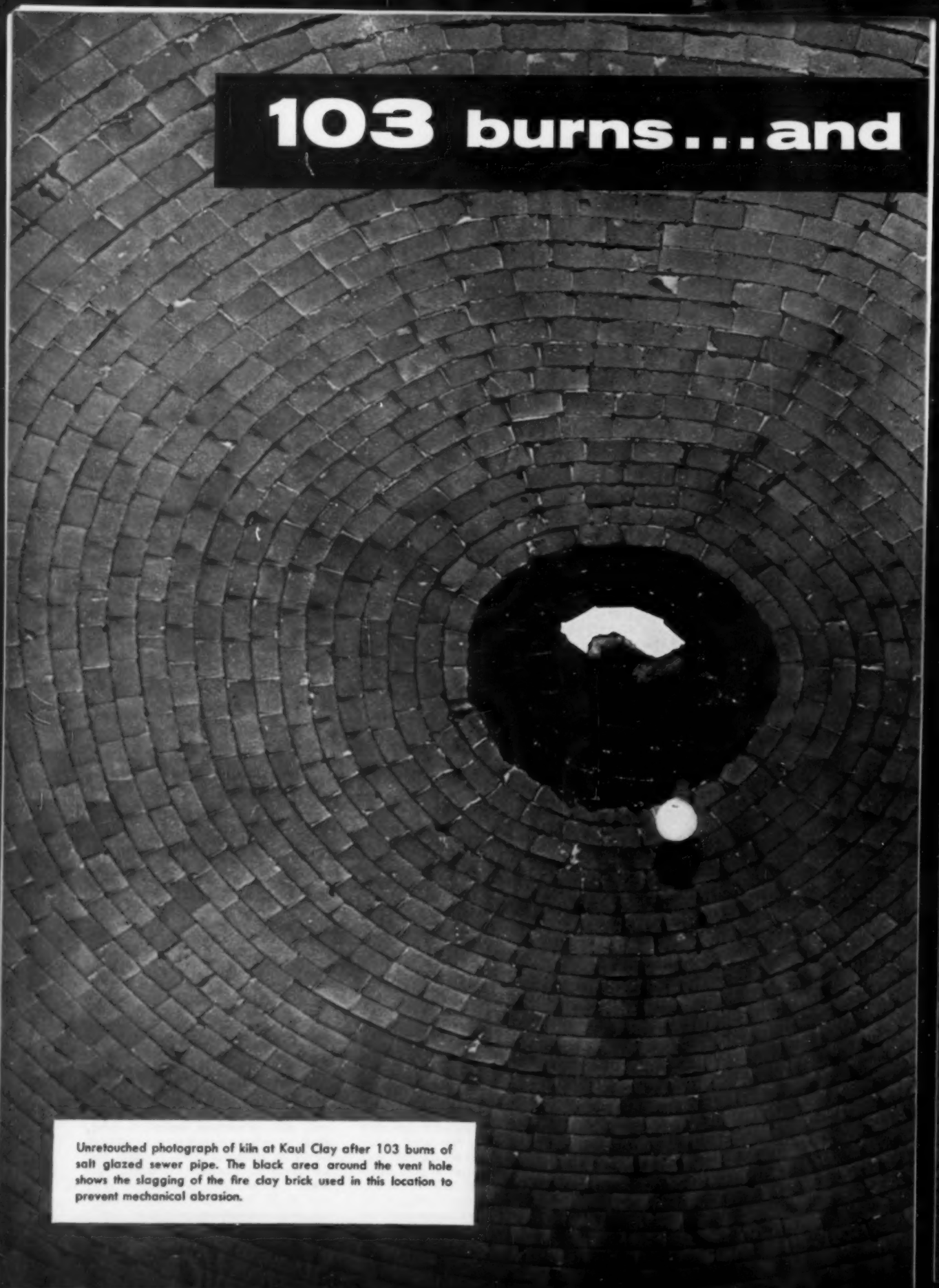


Dust Filter

A new "Roll-Clean" Dynaclone dust filter is reported to retain the basic advantages of the original Dynaclone while providing a more efficient method of cleaning collected dust from the filter bags. The new roller cleaner moves back and forth across the open ends of the filterbags, sealing each bag as it is being cleaned by atmospheric air. This cleaning air is brought into the filter by the main operating fan while the dust filter continues to operate. W. W. Sly Mfg. Co., Cleveland.

799/Circle on Reader's Service Coupon

103 burns...and



Unretouched photograph of kiln at Kaul Clay after 103 burns of salt glazed sewer pipe. The black area around the vent hole shows the slagging of the fire clay brick used in this location to prevent mechanical abrasion.

no salt glaze reaction

B & W Insulating Firebrick increase production 11%, cut cycle time 28% at Kaul Clay Manufacturing Co.

This photograph of #17 kiln crown at the Kaul Clay Manufacturing Company, Toronto, Ohio, is clear evidence of the performance of B&W Insulating Firebrick in salt glaze periodic kiln service.

Kaul Clay's production figures prove it, too. Over a recent six months' period, plant records indicate an *11% increase* in output. They obtained 2.74 burns per month from kilns lined with B&W Insulating Firebrick as against 2.47 burns per month from kilns constructed of firebrick. Cycle time on 4" glazed pipe—setting, burning and drawing—has been reduced from 7 to 5 days. Fuel costs have also been cut substantially. During this time, approximately 40% of Kaul Clay's kilns were converted to IFB construction.

This profitable performance is due to *two* properties of *lightweight* B&W IFB: (1) They store and conduct less heat. Their low heat storage permits quicker heating and cooling of furnaces, thus helping step up production and cut cycle time. It means, too, that less fuel is required to bring them up to temperature. (2) B&W IFB have excellent resistance to the atmosphere of salt glazing kilns. That's because the chemical properties of B&W IFB enable them to withstand alkali attack.

Why don't you begin profiting from the advantages of lightweight B&W Insulating Firebrick in periodic kiln service? Consult your local B&W refractories engineer on your specific application. He may be able to point the way to new savings for you.

Bulletin R-43 gives helpful data on the use of B & W Insulating Firebrick in periodic kilns. Send for your copy today.

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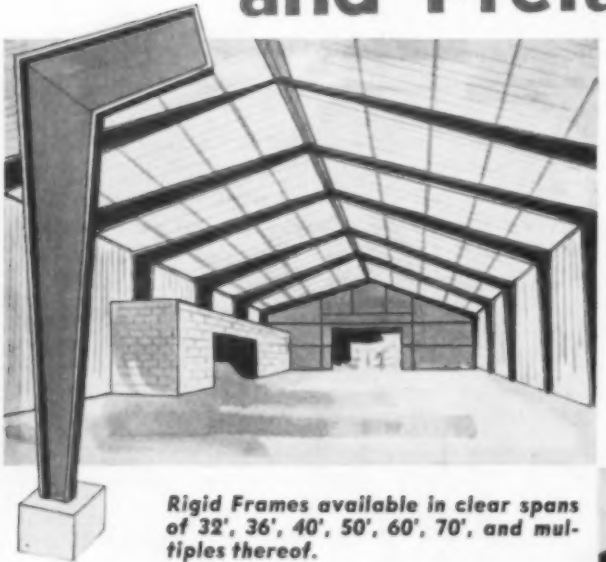
B & W REFRACTORIES PRODUCTS: B & W Allmul Firebrick • B & W 80 Firebrick • B & W Junior Firebrick • B & W Insulating Firebrick • B & W Refractory Castables, Plastics and Mortars • B & W Silicon Carbide

R-575

Now Available . . .

Both RIGID FRAME and Prefabricated *Pipe* Structures



Rigid Frames available in clear spans of 32', 36', 40', 50', 60', 70', and multiples thereof.

Pipe construction is completely flexible and adaptable to your individual needs.

R. G. VARNER STEEL PRODUCTS, INC.

PIPE FABRICATORS • STEEL PRODUCTS

PINE BLUFF, ARKANSAS

POST OFFICE BOX 781 PHONE JEfferson 4-6030

Old Virginia Brick Co., Salem, Va., depends on this ¾-yd. 22-B shovel to load clay at a mountainside pit.

"...fastest and easiest shovel to operate ...when night comes now, I'm never tired."

–says operator of Bucyrus-Erie 22-B

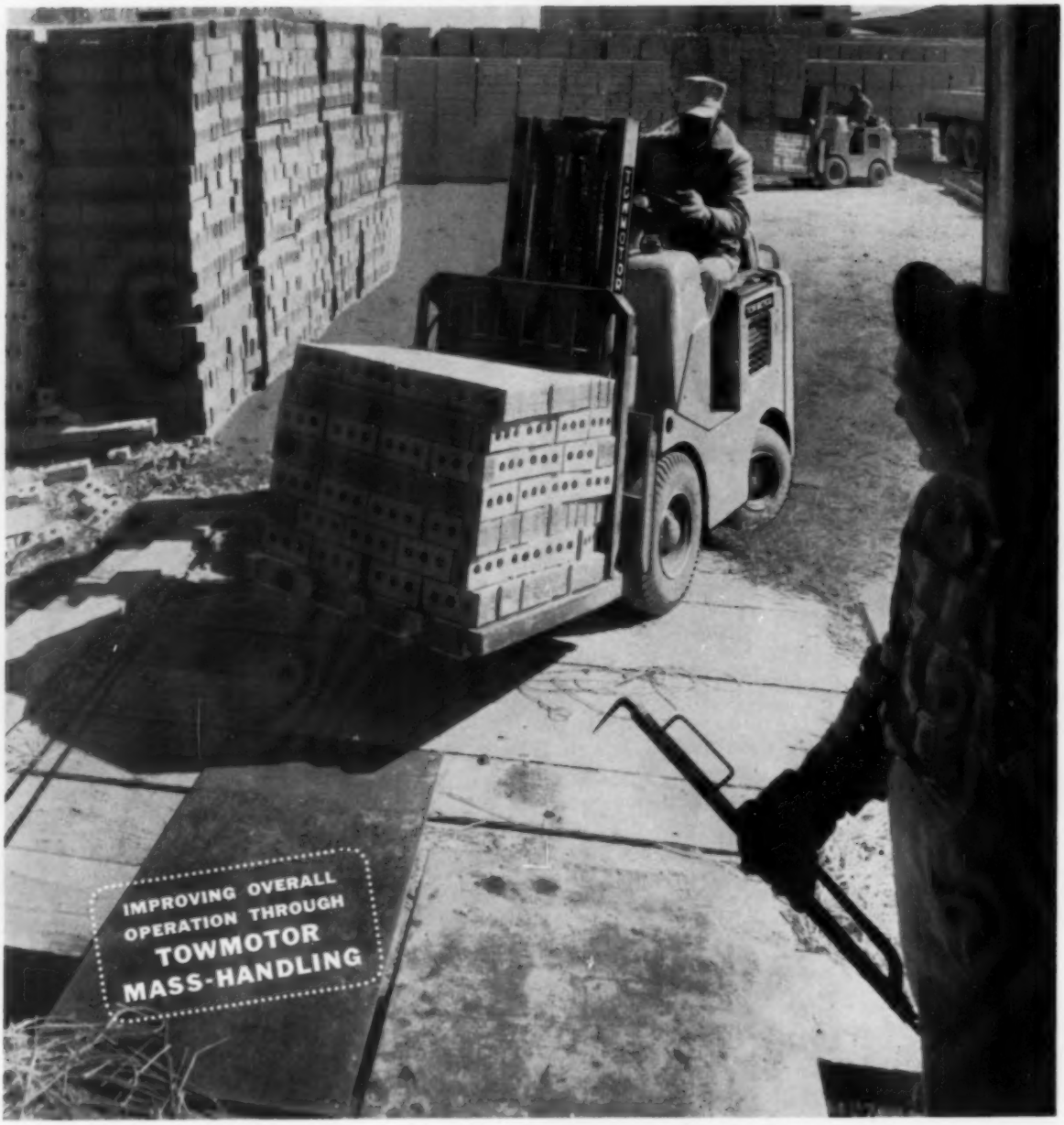
As this operator learned, a Bucyrus-Erie excavator lets a man stay fresh while setting a fast pace in stripping and loading operations. It's this kind of performance that has earned the respect and preference of pit owners for generations.

Like other Bucyrus-Erie excavators, the 22-B gets its traditionally fast cycle from a combination of features — including careful balance of speed and power, with constant response from clutches and brakes that let the operator smoothly coordinate every shovel function.

Give your crews the kind of equipment they need to keep pit operations on schedule. Let your nearby distributor tell you more about the speed and easy-handling features of Bucyrus-Erie ⅜- -to 4-yd. excavators. BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin.

360E57C

A Familiar Sign . . . BUCYRUS ERIE *. . at Scenes of Progress*



...here's "manpower" that hands you a bonus!

Think how many of your plant's handling jobs can be accomplished with much less effort—swiftly and profitably—by one operator "teamed up" with a powerful Towmotor fork lift truck!

You get an entirely new concept of modern mass-handling. You get a "bonus" in extra profits because you multiply manpower with the payroll you have. And you get a bonus in plant-wide morale when work flows on-schedule through every department . . . effortlessly . . . with a bigger day's work done.

Called the "ideal" fork lift truck by management and operators alike, the latest Towmotor models offer exclusive features as advanced as these, at no extra cost:

- New-concept functional engineering
- Simplified dual-entry compartment
- Full-traction weight distribution
- Adjustable off-center visibility
- New *motion-studied* centralized control
- Towmotor improved precision steering

Power steering, 'TowmoTorque' Drive at extra cost

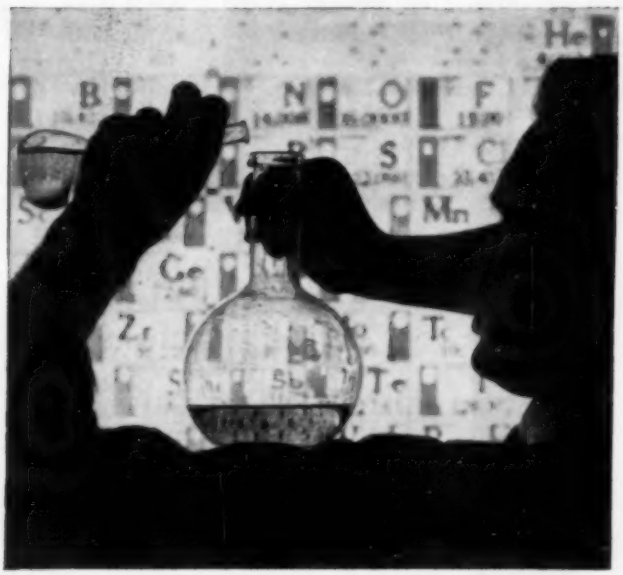
These and 60 other points of superiority are described in Towmotor booklet SP-23 for comparison. Get a copy from Towmotor Corporation, Cleveland 10, Ohio.

Leaders for 38 years in building Fork Lift Trucks and Tractors

TOWMOTOR
THE ONE-MAN-GANG
-GERLINGER

Gerlinger Carrier Co., Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland, Ohio

FROM VITRO —another example of research at work for you...



GLAZE STAINS that are extremely stable and low in cost

As many manufacturers know from experience, Vitro Glaze Stains have always offered outstanding performance and economy.

Now—many of these stains have been made better than ever before!

For example, Vitro now offers several new chrome alumina pinks in the 600 series that have been improved in strength to give purer color values without undesirable brown spots. They're easy to apply, their initial cost is low, and they are extremely stable to Cone 12.

The 4000 series of Vitro's zirconium-vanadium yellows, greens and blues are also very stable within any temperature range normally employed and are of purest value—free from gray undertones. And like the chrome alumina pinks, these improved colors may be intermixed to give a variety of color values, or used at reduced percentages to produce a host of beautiful pastels.

For complete information on these glaze stains and other Vitro colors, see your Vitro representative, or write us.

Colors by Vitro

VITRO MANUFACTURING COMPANY • 60 Greenway Drive, Pittsburgh 4, Pa.

A Division of Vitro Corporation of America · West Coast Plant: 1625 West El Segundo Blvd., Compton, Cal.

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If you know the manufacturer, check the advertisers index (page 1) for alphabetical listing and page number.

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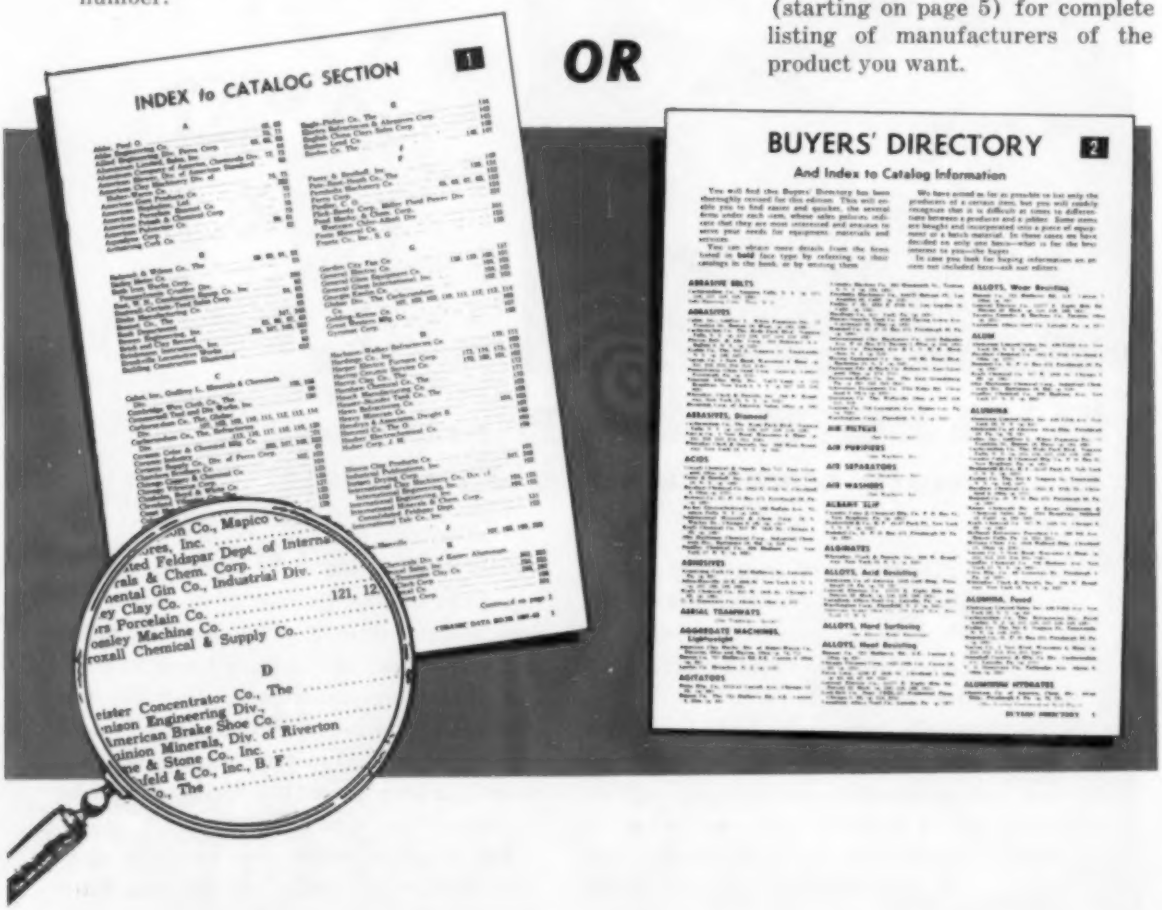
Check the BUYERS DIRECTORY (starting on page 5) for complete listing of manufacturers of the product you want.



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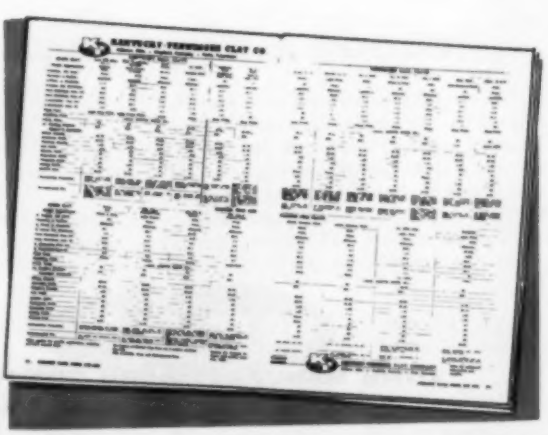

Ceramic Data Book

3. NEED MORE INFORMATION?

Simply fill out one of the handy return cards (page 353)—or write the manufacturers direct.

Note:—Many CDB advertisers list their local branch offices and representatives. Often, a local phone call will get quick results.

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You will find new advertisers with new products—many of which can help solve your plant problems—make your operation more efficient.

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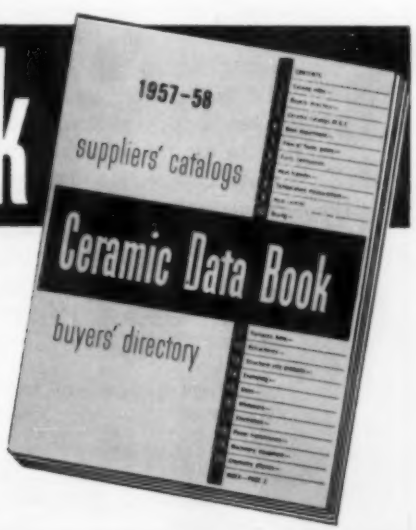
for ready reference for your plant problems, expansion or modernization. The editorial-engineering section (starting on page 501) contains up-to-the-minute details for your guidance.

Ceramic Data Book



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Phone: FRanklin 2-6880

let's talk turkey about your business

It's a good time — as the year comes to an end — to take stock of your business operation. And especially, your *new business* operation. In these days of stiffer competition and rising overhead, the costs of finding new business have gone up steadily. That's why it's more important than ever to concentrate your efforts where you *know* there's business to be had. And that's why you need *Dodge Reports!* They tell you in advance what jobs are coming up in the construction field that will interest you . . . and whom to contact about getting them.

If you'd like to see how to get more and better business, just read and mail this coupon today!

TO: **DODGE REPORTS**, DEPT. 49, 119 WEST 40th STREET, NEW YORK 18, N. Y.

Yes! I'd like to see how to get more business by knowing in advance who's going to build what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area and type of construction activity that interests me. Also, that I won't have to wade through piles of extraneous data to find the information I need.

I'm interested in General Building ☐
House Construction ☐
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ADDRESS _____

CITY _____ ZONE _____ STATE _____

Dodge Reports
For Timed Selling to the Construction Industry

WILLIAMS *heavy duty* HAMMER MILLS

- **Crushes, Grinds, Shreds To Finished Size In One Operation**
- **Reduces Production Costs Up To 50%**
- **Saves Up To 75% On Equipment Cost**

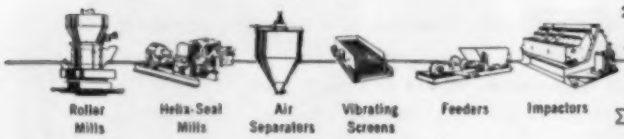
Williams No. 60 GA Mill with heavy duty steel plate frame. Cover has been opened to show heavy duty manganese steel liners, breaker plates, grate bars and hammers.

Whether your size reduction job involves crushing, grinding or shredding—whether the material is mineral, chemical, vegetable or animal—Williams has a hammer mill designed to *do it from start to finish in a single operation.* More uniform product, increased output, plus savings in time and labor can *cut production costs as much as half!*

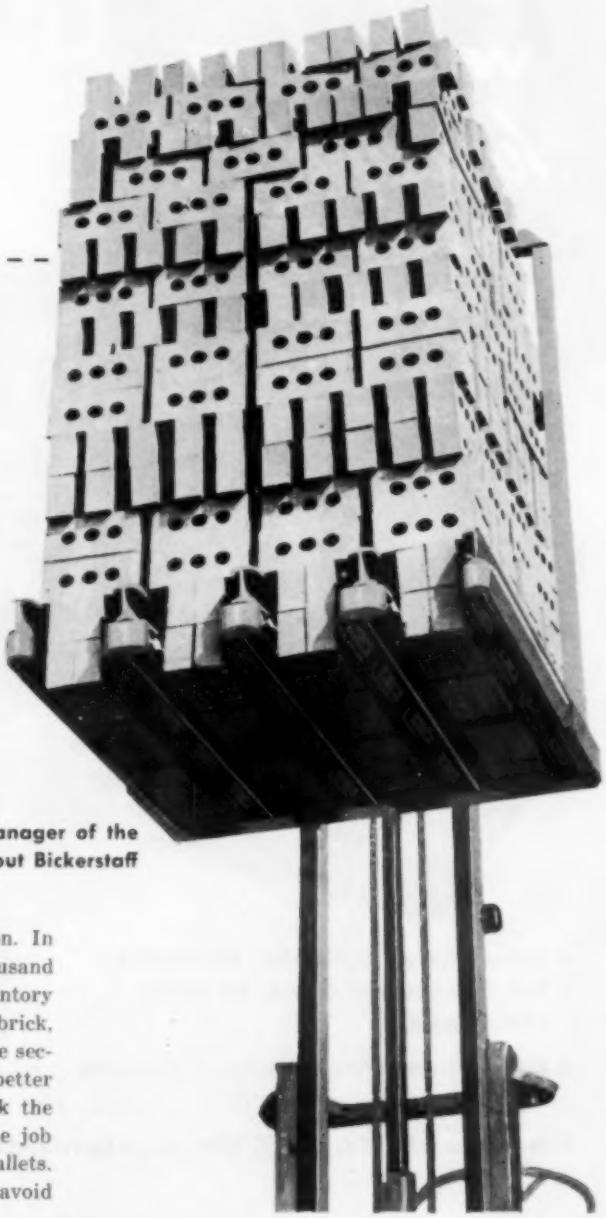
Extra primary and secondary crushers are seldom required with a Williams—no extra drives or conveyors, no costly foundations or buildings for additional crushers are necessary. Expensive maintenance, replacement parts, excessive downtime and labor are reduced to a minimum.

Learn how a Williams hammer mill can step up your output, and improve your product quality. *Write —explain your operation—and ask for a catalog.*

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
2709 N. BROADWAY **St. Louis 6, Mo.**



WILLIAMS
CRUSHERS GRINDERS SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World



How to . . .

INCREASE OUTPUT CUT LABOR COSTS

In a letter to Bickerstaff, Inc., E. H. Smith, Works Manager of the Cooksville Co., Toronto, Canada, has this to say about Bickerstaff Brick Forks . . .

"This equipment has given us great satisfaction. In the first place, we find a saving of several thousand dollars because we do not require a large inventory of wood pallets. As we cube in lots of 400 brick, you can see this amount is considerable. In the second place, using a side shifter, we can make a better load on the truck for shipping. We can stack the brick tighter, and the brick then arrive on the job in better condition than when loaded using pallets. Pallet return is always a problem, which we avoid using the Bickerstaff Fork."

Cooksville Company does all loading by use of Hydraulic Utility Models of Bickerstaff Brick Forks.

Inquire today about a

BICKERSTAFF BRICK FORK

to cut your operating costs and increase output

BICKERSTAFF, INC.

COLUMBUS, GEORGIA

MANUFACTURERS, ENGINEERS, DESIGNERS OF MATERIALS HANDLING EQUIPMENT

Dealers throughout U. S. and Canada

West Coast Representatives: WALTER C. STOLL & SONS

5028 Alhambra Ave., Los Angeles 32, California

In these days when industry is faced with cost increases for labor and materials . . . ceramic kiln operators are demanding improved quality refractories specifically designed to give longer, more efficient service. Throughout the Clay Products Industry, the trend is swinging to the use of *creatively engineered* refractories manufactured by The Pyro Refractories Company.

Operators today are compiling enviable service records with PYRO tunnel kiln Car Tops and PYRO Kiln Floor Tile and Jambs. Kiln design, methods of firing, type of fuel and operating temperatures . . . all affect refractory service, but PYRO refractory products were especially developed and tested to more than meet the requirements of ceramic kilns.

HOW TO REDUCE REFRACTORY COSTS . . . INCREASE SERVICE LIFE

These products are strong, have greater resistance to thermal shock, exceptional stability under load at high temperatures, fulfill many of the requirements of diversified kiln operation, and require minimum maintenance. For additional information and prices write our Sales Office at The Pyro Refractories Company, P. O. Box 488, Oak Hill, Ohio.

PYRO

THE PYRO REFRACTORIES CO.

Oak Hill, Ohio

DUREX REFRACTORIES CO.
Jackson, Ohio

PORTSMOUTH CLAY REFRACTORIES CO.
South Webster, Ohio

An important message for manufacturers of glazed brick

Architects in increasing number are writing deeply tinted and pastel colored glazed brick into their specifications for commercial buildings as well as residential structures.

As every brick manufacturer knows, this trend imposes new and different problems on production. Their solution is clearly not within the scope of normal day-to-day operations. Clays, methods and equipment vary so widely in various plants, the basic techniques of applying colored glazes must be adapted to each situation. Equally important, color formulation must be compatible with conditions and the characteristics of the brick itself.

For many years, Drakenfeld has supplied the industry with high-quality engobe stains and glaze stains. Today our "know how" can be particularly helpful to brick manufacturers in meeting the challenge of growing demand for glazed brick in a wide range of colors. Now more than ever before our complete research, color processing facilities and service can assist you in producing modern, colorful glazed brick economically and selling it profitably.

We invite you to call in one of our field engineers for a discussion of our cooperation in color research and application and our ability to serve you.

Drakenfeld

YOUR PARTNER IN SOLVING COLOR PROBLEMS
B. F. DRAKENFELD & CO., INC.
Executive Offices: 45 Park Place, New York 7, N. Y.
Factory and Laboratories: Washington, Pa.

Pacific Coast Agents:
BRAUN CORPORATION, 1363 So. Bonnie Beach Place, Los Angeles 54, California—Phone: ANgelus 9-9311 • BRAUN-KNECHT-HEIMANN COMPANY, 1400 Sixteenth St., San Francisco 19, California—Phone: HEmlock 1-8800

TO HANDLE HIGH DUST LOADINGS

— at high volume and pressure
— with unusual economy

New "Buffalo" Type "CR" Radial Blade Fan

• MECHANICAL EFFICIENCY above 78% over a broad range

Designed for rugged industrial service, the new "Buffalo" Type "CR" Fan has a highly desirable balance of efficiency and resistance to abrasion. Already proven an economical choice in the cement and steel industries, it has high volume, high pressure characteristics which often permit selection of a smaller fan for lower first cost.

The housing is completely streamlined, from its smooth inlet bell to the gradually diverging outlet — providing maximum static efficiency with reduced housing wear because of the minimized turbulence. The blades are radial at the tip, curving smoothly forward at the inlet to meet the air at the correct angle of attack, further contributing to peak performance with minimum blade wear.

From every standpoint — efficiency over a broad range — long life — freedom from troubles — economy — it will pay you to write for Bulletin FD 205 and investigate these superior new fans.

BUFFALO FORGE COMPANY
BUFFALO, NEW YORK

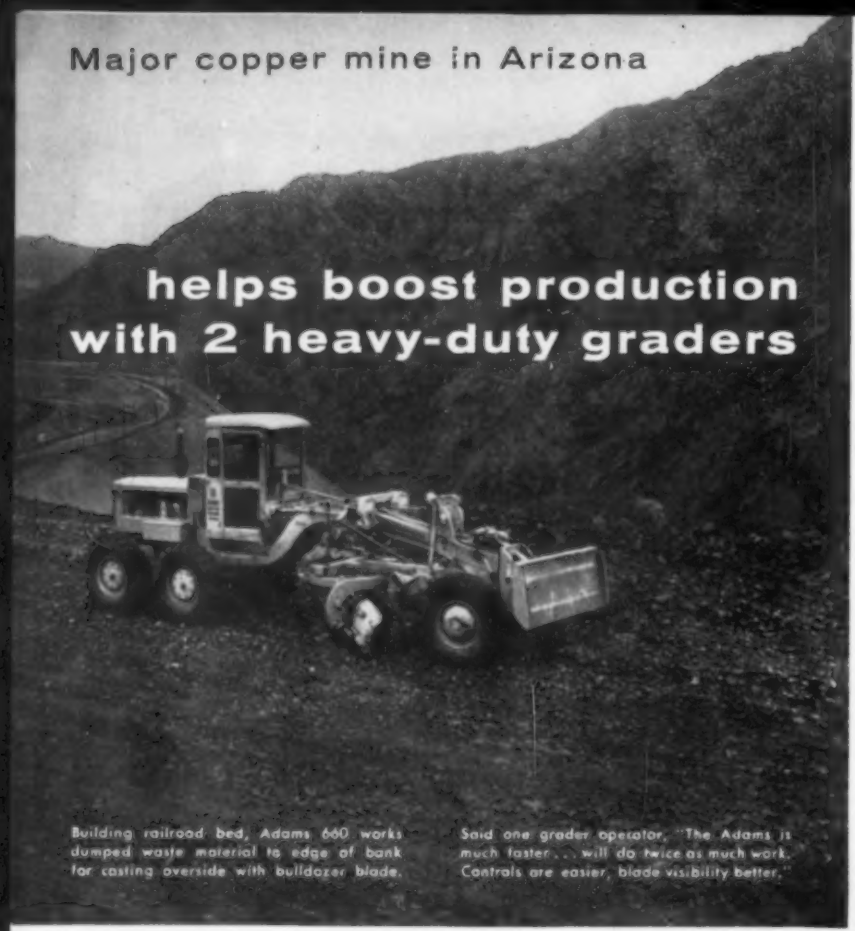
Canadian Blower and Forge Co., Ltd., Kitchener, Ont.

"Buffalo"

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT HEATING EXHAUSTING FORCED DRAFT COOLING PRESSURE BLOWING

Major copper mine in Arizona

helps boost production with 2 heavy-duty graders



Building railroad bed, Adams 660 works dumped waste material to edge of bank for casting overside with bulldozer blade.

Said one grader operator, "The Adams is much faster . . . will do twice as much work. Controls are easier, blade visibility better."

At a large open-pit mine in Arizona, ore is mined at low levels and hauled by railroad cars . . . at higher levels, overburden is removed by a fleet of 35-ton trucks. To help these haulers travel at safe, profitable speeds, and to speed road and rail-spur construction — the mine uses two 150 hp Adams* 660 graders.

Patrols roads 24 hrs. a day, 6 days per week

One of the heavy-duty "660" LeTourneau-Westinghouse units is used primarily for maintaining many miles of haul roads. This fast-moving grader patrols these busy mine roads 24 hours a day, 6 days a week. It goes wherever needed . . . to fill ruts, level washboard, clear debris dropped by overloaded haulers and improve drainage.

For working along steep drop-offs, the Adams' standard blade extends a full 7½ ft. beyond wheel line, to give operator safe working margin. Extra-safe dual-braking system stops transmission as well as tandem drive-wheels for sure, safe stops and minimum brake wear.

Helps build new roads, RR grades

The second "660" grader — equipped with bulldozer blade — is used on new construction work and for maintaining waste dump. When constructing new roads or railroad beds, the "660" handles all the blade work.

Works any kind of material

Wide range of speeds give Adams advantage for working efficiently in any kind of material. All 80 to 150 hp Adams graders have an 8 forward and 4 reverse speed transmission. In addition, optional 3-speed "creeper" gears (0.23 to 1.82 mph) may be added. These low, full-power speeds move heavier loads, handle rocky material with greater speed and safety, insure more accurate blade control for fine finishing around forms or obstructions.

Adams' largest grader — the powerful 190 hp POWER-*Flow* 660, with torque converter — gives you an infinite number of speeds forward to 27.4 mph . . . reverse to 24.4 mph. Adams' smallest, the 60 hp "220", has 5 speeds forward to 18.3 mph — best in its class.

See Adams in action

Why not see how you, too, can step up mine and quarry production, cut operating costs — with heavy-duty Adams graders? There are 6 models: 190, 150, 123, 115, 80, 60 hp. Choice of GM or Cummins engines on 5 larger models. Call or write for a demonstration at your pit.

With dozer blade, "660" maintains waste dump. Over 72% of the total amount of material mined at this copper mine is waste.

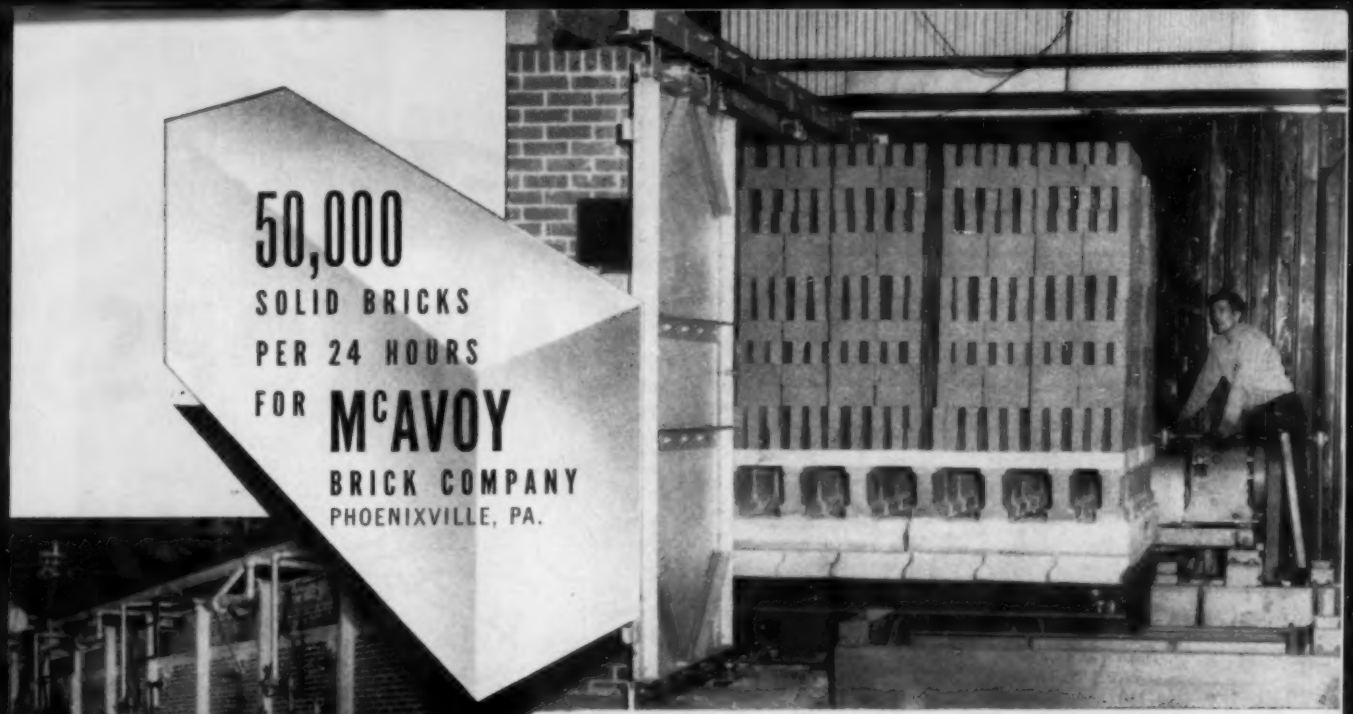
Powerful "660" helps build exploration roads and RR road beds fast and easy. Commenting on the Adams grader, the second operator said, "I like the power and weight of the '660'. Also, the big 14-ft. moldboard and wide choice of speeds."

*Trademark G-1483-M-1

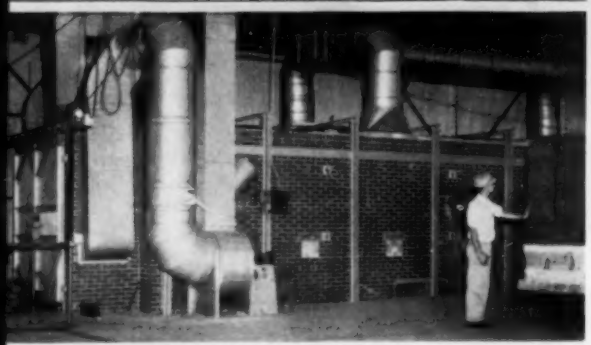
LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

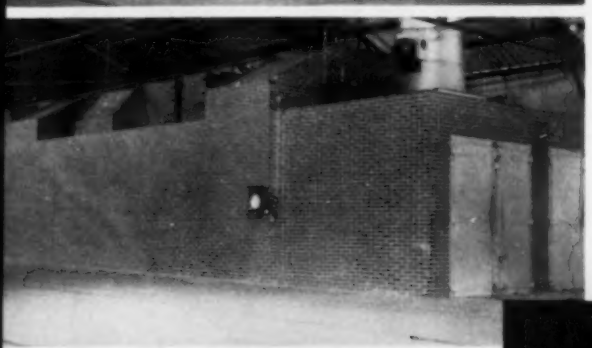
A Subsidiary of Westinghouse Air Brake Company

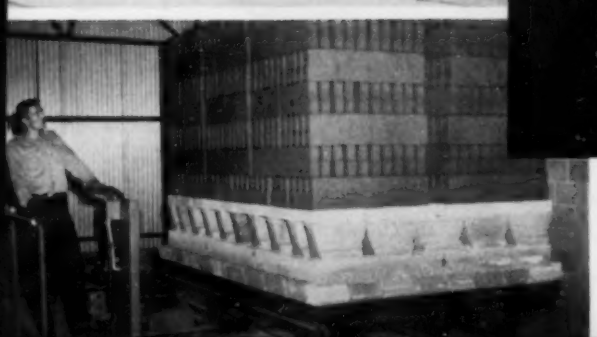
Where quality is a habit



50,000
SOLID BRICKS
PER 24 HOURS
FOR McAVOY
BRICK COMPANY
PHOENIXVILLE, PA.







WITH THIS

DRESSLER

TUNNEL KILN

AND

DRESSLER-ROBINSON
TWIN TUNNEL DRYER

The 290 ft Dressler Kiln, firing a mixture of manufactured and natural gas, operates in conjunction with a twin-tunnel, 141 ft dryer. A body of low green strength and high silica and carbonaceous content is handled most successfully through drying and preheating. Good oxidation and cooling control permits dense loading with freedom from cores or air checking. ● Additional operating advantages include controlled heat penetration by adjustable orifice burners, using multi-burner principle and underdeck firing, providing uniform shrinkage and eliminating danger of wrecks caused by "hot spots." ● May we have your inquiries?

SWINDELL-DRESSLER *Corporation*

DESIGNERS AND BUILDERS OF MODERN INDUSTRIAL FURNACES

PITTSBURGH 30, PA.

Swindell-Dressler Corporation provides a complete engineering service for the ceramic industry in the design and construction of new plants, and modernization of existing facilities. Consultations arranged gladly on request.

PACO

CAR TOPS

S-t-r-e-t-c-h

your dollar twice as far!

PACO CAR TOPS are stronger—give better heat distribution—produce uniform ware—and last longer!

In plant after plant, PACO CAR TOPS have cut replacement cost up to 50%! You can also enjoy this increased economy. There is a PACO engineer as close as your telephone—place your trial order now and let the product prove itself. For complete information on sizes, prices and delivery, write or call us without obligation.

Manufactured by

NORTH STATE PYROPHYLLITE COMPANY, INC.

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OTHER PACO PRODUCTS INCLUDE: • PACO PLASTIC • PACOCAST • PACO H.T. CEMENTS • PACO FIRE BRICK MORTAR • PACO SIDE CAR BRICK • PACO FIRE BRICK • PACO LADLE LINING • PACO HEATZONE COMPOUND

Brick & Clay Record

November 1957 Vol. 131, No. 5

5 SOUTH WABASH AVE.
CHICAGO 3, ILL.
FRanklin 2-6880

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BRICK AND CLAY RECORD is indexed by Engineering Index, Inc.

Now For The Next Job!

Through the valiant efforts of the Structural Clay Products Institute and the support of other clay products associations as well as every member of the industries, the depletion allowance is now a fact.

BRICK & CLAY RECORD believes that this is a very great accomplishment for the industry and now it is ready to tackle the next big job.

Without SCPI and it's leadership supplied, the industry would not have adequate depletion. Years of hard work, meetings, poring over testimony and much money went into this accomplishment. Certain individual members of the industry as well, expended money and time away from their own busy jobs. A debt of gratitude by all clay plant operators is due the SCPI leaders and industry participants in this job well done.

As a result of the hard work, the industry has accumulated some $100 million in depletion funds since the case has been in court and will continue to be permitted to deduct about $12 million each year unless a new ruling is passed by Congress.

Now that depletion is behind the industry it is time to look at the next job, which is advertising and promotion.

There are two ways in which appreciation for the depletion victory can be shown SCPI and the other associations in the industry, all of whom cooperated.

We seriously suggest that non-members of these associations should give deep, honest thought to contributing to the associations. The non-members, despite contributing virtually nothing to winning the fight, will benefit as fully as members—and at far less cost in time, effort and money.

These non-members, we firmly feel, should join their association and further help improve our industries. There can be no greater proof of industry association value than winning this fight . . . there can be no more important work than a joint effort to further improve our industries. Actually the cost of belonging has been already earned by the depletion allowance so the dues are nothing.

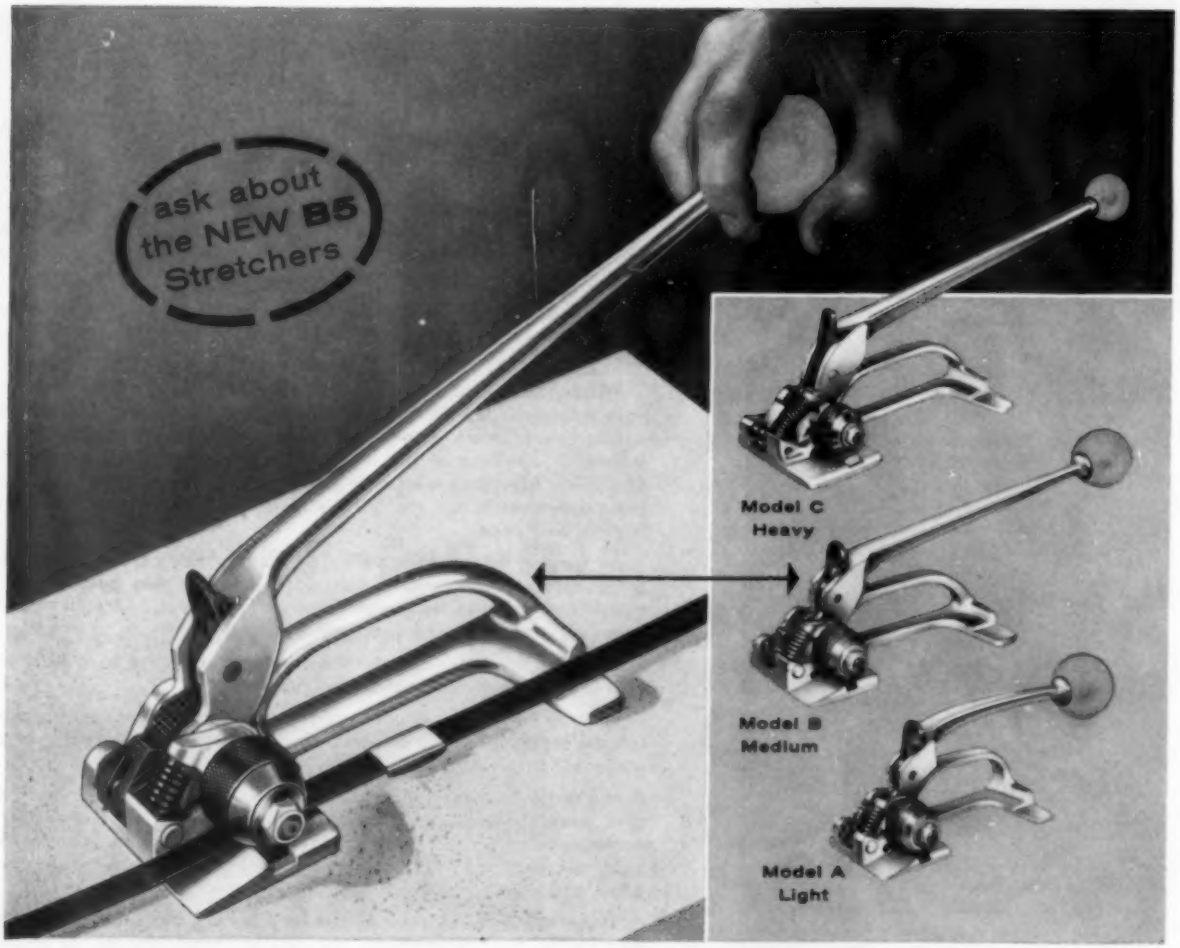
We do not, however, believe that the funds realized from depletion should themselves be depleted in extra dividends or price cuts but should be earmarked for new clay deposits and plants for which they are meant as far as necessary.

A large sum in back depletion allowance is, however, available as well as an accumulation of funds normally set aside for this purpose which could be tapped for advertising, promotion and research for those industries that do not have it.

In the meantime an advertising battle should be launched to put clay products on top; brick—tile—clay pipe.

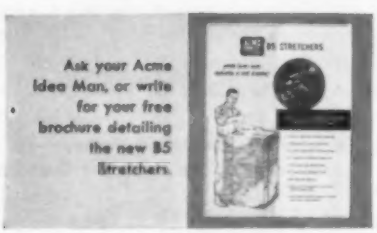
Let's measure our efforts in terms of depletion money—up to $5,000,000 per year for this purpose—it is the next very important big job.

The Editors



Ask your AIM* about the brand new B5 stretchers

Acme Idea tensioning tools for steel strapping



ACME STEEL COMPANY now offers the new B5 Stretchers . . . the most versatile Idea strapping tools available to industry.

The B5 Stretchers are rugged but without excess weight and properly balanced. They can be used left or right handed, with the strapping dispenser either ahead or behind the operator for standard or reverse loop applications.

The design of the new B5 Stretchers permits fast, easy entry and alignment of the strap loop ready for tensioning. And the B5 Stretchers can be used to apply strapping in any direction, with the same ease of operation.

The arrangement of the rotary gripping dog permits continuous, unlimited take-up, quick release after strapping is tensioned. B5 handles can be positioned quickly for maximum leverage in confined areas.

B5 Stretchers come in three sizes—Model A for light, Model B for Medium and Model C for heavy applications.

***Ask your Acme Idea Man** about the new B5 Stretchers today. Contact him at the nearest Acme Steel office, or write: Dept. BES-107, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois.

In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Avenue, Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

Reports from...
Clay Products

The Growth Industry

Faith In Us

Sometimes it's a little hard to see what's coming for an industry; a little hard to sort out the many facts, figures, predictions and statements.

We'd like to suggest one guide to the future of our industry, a guide that's pointing to the side of optimism. We're referring to the constant growth and development of the suppliers to our industry—and also to the many new firms entering the field as suppliers of equipment and machinery.

Many of our advertisers who supply our industry are underway with major expansion programs. One leading refractory industry supplier has just finished a major expansion of his facilities. Another in the brick field is doing the same. There are many we could single out by name, but this would be unfair since we couldn't list them all.

The key point, perhaps, is that these manufacturers are engaged almost exclusively in supplying our industry. Many of the others are also expanding, but our industry is only a part of their business. But when the many who supply almost entirely to the clay products industry are busy with expansion and modernization, it shows conclusively that they expect our industry to keep going up.

Busy Modernizing

It can reflect many things . . . growth of our industry, new products, results of research and development work. But the real point is that companies outside our industry are putting up their money for facilities because of their firm belief in the potential and progress of our industries. It's a good sign to see.

$15 Billion Is Market For Home Improvements

For those who might be inclined to low-rate such developments as SCR Re-nu-veneer, we'd like to quote some statistics from Roy F. Cooke, assistant commissioner for the FHA program for property improvement, modernization and repair.

Cooke recently told the Consumers Banking Association that the home improvement field is presently a $15 billion market. Since its beginning in 1934, the Title I FHA program has insured over 20 million loans with net proceeds in excess of $10 billion. The program, Cooke said, is now insuring over 5,000 loans per day. Loans this year are up 30,000 over 1956. Cooke also indicated that in all probability, the average amount of loans will continue to rise.

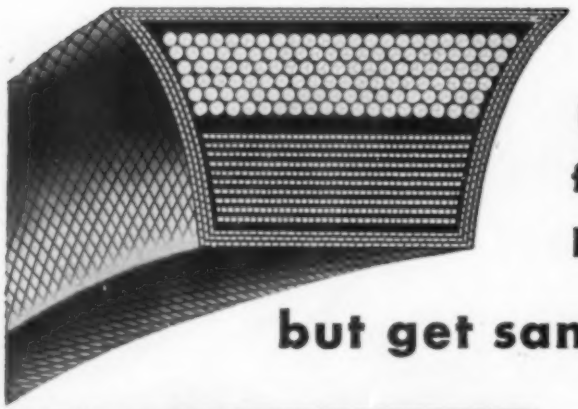
Older Homes Being Bought

Cooke also pointed out that many home seekers are turning attention to the purchase of older homes in well-established neighborhoods, with the aim of modernizing these houses.

All of this seems to point to a giant market for clay products, inside and out of the house. Cooke put particular stress on FHA insistence on the need for quality contractors. Our industry has quality—both in people and product, as proved by the SCPRF's careful screening of Re-nu-veneer dealer-applicator applications.

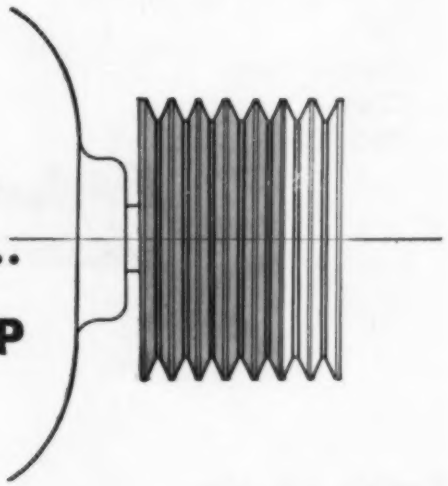
It's a market we should aim for—and get.

5 Gates Super Vulco Ropes do the work of 7 standard V-belts



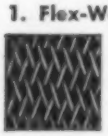
Use fewer belts...

but get same HP



No other V-Belt has ALL these advantages

1. Flex-Weave Cover (U.S. Pat. 2519590)



A Gates exclusive: provides greater flexibility with far less stress on fabric. Cover wears longer . . . increases belt life . . . more power available to driven machine.

2. Concave Sidewalls (U.S. Pat. 1813698)

Concave sides (Fig. 1) increase belt life. As belt bends, concave sidewalls become straight, making uniform contact with sheave groove (Fig. 1-A). Uniform contact means less wear on sides of belt . . . far longer belt life.

3. Tough, resilient Tensile Cords

Super strong resilient tensile cords provide 40% greater horsepower capacity . . . easily absorb heavy shock loads . . . reduce number of belts required save weight and space.

4. High Electrical Conductivity

Built into Gates Super Vulco Ropes for safer drives (in explosive atmospheres).

5. Oil, Heat, Weather Resistant

Special rubber compounds make Super Vulco Ropes highly resistant to heat, oil, and prolonged exposure to weather.

Cut sheave width and weight . . . design your drive to benefit from the greater HP capacity of Gates Super Vulco Ropes.

5 Gates Super Vulco Ropes will do the work of 7 Standard V-Belts. A Super Vulco Rope Drive delivers more HP per dollar invested than any standard V-Belt drive.

Sheaves with fewer grooves cost less . . . weigh less . . . occupy less space. Your drive design is improved.

Helpful drive data is quickly available to you. Simply call your nearby Gates distributor for advice from a Gates V-Belt Specialist. Stocks carried in industrial centers throughout the world.

The Gates Rubber Company
Denver, Colorado

TPA 264

Gates — The Mark of *Specialized* Research

Gates Super VULCO ROPE Drives

NEWS OF THE INDUSTRY

Cooperative Effort in "House of Labor"

The Minnesota State Fair saw a display of cooperation between the Minnesota State Conference of Bricklayers, the Structural Clay Products Institute, Associated General Contractors of Minnesota, local brick distributors, and the laborers union. The State Conference secured an exhibit area in front of the "House of Labor" on the fair grounds and had apprentices from locals around the state working during the day building wall sections and pattern brickwork.

Eric Johnson, President of Minneapolis Local #2, was there each day to plan the work and supervise the apprentices. The laborers union of Minneapolis and St. Paul supplied helpers for the seven working days of the ten day fair which ended on Labor Day.

Member manufacturers of SCPI, Region 6, supplied materials for the exhibit, and the brick distributors of Minneapolis and St. Paul had salesmen there to help answer questions on the many uses of brick. SCPI also furnished signs and literature and helped co-ordinate the program.

AGC of Minnesota furnished working equipment, insurance, and further co-ordination for the exhibit.

The theme of the affair was to inform the public of the apprentice training program being carried out and, of course, to promote masonry construction. "SCR brick"* and cavity wall sections were built as a permanent display and the apprentices continually worked in front of the fair crowds building patterns and walls.

*Reg. U. S. Pat. Off., Pat. Pend., SCPRF.

St. Louis Brick Sold

Mr. and Mrs. Robert Auer have acquired ownership of St. Louis (Mo.) Brick Co., Inc., according to a recent announcement. The firm handles brick, haydite block and similar products. Auer is now president and secretary-treasurer; his wife is vice-president.

Sales, Earnings Show Increase at Pacific Clay

Sales and earnings of Pacific Clay Products, Los Angeles, showed substantial increase for the first nine months of this year, President John D. Fredericks has announced.

Sales for the period ended Sept. 30 totaled $6.6 million, compared with $6.1 million for the same period a year ago. Net income for the 1957 period amounted to $975,973, equal to $1.89 per share. For the similar 1956 period, figures were $885,818 or $1.72.

Court Refuses Depletion Review!

In a decision that will be an historic one for the structural clay products industry, the Supreme Court recently refused Government petitions for certiorari in two depletion cases, Merry Brothers and Dragon Cement.

This means that the Court refused to review these two cases, both of which had been decided against the Government in lower courts.

Thereupon the Internal Revenue Bureau announced that it is taking steps to dispose of pending litigation and claims involving brick and tile clay, and cement rock, as required under the previous decisions, and to conform Treasury regulations and outstanding rulings accordingly.

What all of this means, in effect, is that our industry has won the depletion cases, in main allowing both future and past-date depletion allowances to manufacturers in our industry.

The early reports state that "Consideration is being given as to the applicability of these decisions in cases involving fire clay and limestone," according to the Treasury Dept.

Many Get Refunds

As some examples of what the decision will mean to individual companies, American-Marietta Co. (owner of Dragon Cement) estimates that their tax adjustment will total nearly $2.5 million; that their 1957 potential tax saving is estimated at $1.5 million.

Hydraulic Press Brick Co. expects to get back $580,000 in taxes paid through the years 1951-1957.

Government attorneys have estimated that the decision could lead to $133.5 million in tax refunds, plus an annual tax revenue loss of some $8.8 million.

NEWS OF THE INDUSTRY

John Foster To Sell B&W Kaowool

A selling agreement has been reached between the Refractories Div. of Babcock & Wilcox Co. and John J. Foster Mfg. Co., Santa Ana, Calif., through which Foster is granted exclusive selling rights of B&W Kaowool, a patented insulating material, in the United States and Canada.

The Kaowool franchise will be used in selling to aircraft manufacturers in the two countries. Kaowool is used as insulating blankets for tail pipes and afterburners of jet engines, and in firewalls for airframe structures.

New Aggregate Plant Begins Production

Production has begun at the new Thermal Aggregate Engineers' plant near Sulphur Springs, Tex. The plant is using a new process developed by H. F. Ball, Jr., and Howard Hicks, company owners, for manufacturing aggregate-type material by firing clay.

Keller, Others Buy Gem Clay Co.

J. Harrison Keller of Sebring, Ohio is the new president of Gem Clay Forming Co. of the same city, following sale of the company on Sept. 30.

Keller, president of Salem China Co., heads a group of men connected with the ceramic industry who have purchased the 53-year-old business.

Evan Morris, of Alliance, is secretary treasurer. Other individuals in the new ownership have not been revealed as yet. Morris announced that there are "no plans at present for any major changes in plant operations and personnel."

C. K. Wiley, who has been president since 1946, will remain with the company doing sales development. Wiley will also work on new product development.

The company employs about 200 persons in manufacture of pressed ceramic products and special refractory material. Morris said the plant at present is operating on a full production schedule.

Cherokee Moves Office

Cherokee Brick Co. has moved their offices from the First Citizens Bank Bldg. in downtown Raleigh, N. C., to the Caviness Building at 175 N. Johnson St. Their mailing address is now P.O. box 10653.

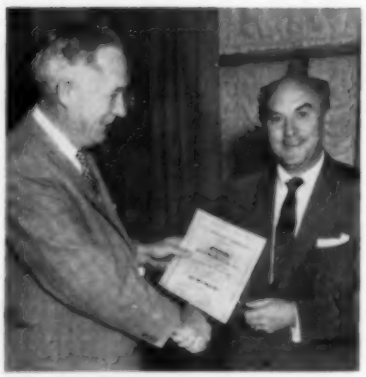
Natco Promotes Four At Cordova Brick Plant

L. A. Bretz, Natco vice president, has announced that Harry Papier has been promoted to general superintendent of Natco's Southern operations. This includes the Cordova plant, North Birmingham plant and the Bessemer plant, all in Alabama.

Charles D. Cross has been promoted to Cordova plant manager and Richard Matheny to assistant plant manager. Don Rassner is now ceramic engineer in charge of control and development at Cordova.

17 U. of Texas Students Get Scholarships

Seventeen Univ. of Texas ceramic engineering students have received tuition scholarships from the ACS Southwest Section. Discussing the scholarship presentation are James W. Hansen, Lone Star Brick Co.; Bill Kelly, Universal Rundle Corp.; Ray Pafford of Acme Brick Co., chairman of the Section's Ceramic Education Committee; Dr. Joe Weiss and Dr. Robert Stone of the U. of Texas Ceramic Engineering Faculty.



St. Louis UMA Gives Design Award

Presentation of a plaque, a citation and award check were made to St. Louis architect Syl G. Schmidt at a luncheon given by the local Unit Masonry Association.

Schmidt was first place winner in a recent design award contest of the UMA for a design best utilizing unit masonry to achieve beauty, stability and economy. The winning award was for the St. Louis County Library Building.

Schmidt, on the right above, receives the award from Leo F. Havey, St. Louis UMA president.

$150,000 Fire At Star Brick Plant

A fire that spread from a dryer caused an estimated $150,000 damage at the Star Brick Corp., East Kensington, N. Y.

The damage included loss of about three-quarters of a million of green brick which were ruined by water plus complete loss of two kilns.

$800,000 Expansion At Wadsworth B&T

Doubled output is expected to result from an $800,000 addition recently made at the Wadsworth (Ohio) Brick & Tile Co. The addition consisted largely of new, more automatic plant machinery and facilities.

James Doty Dies

James T. (Buck) Doty, 79, a pioneer in the brick industry at Ferris, Tex., died October 4 at his home after an illness of three years.

Doty was associated with the brick industry for more than fifty years, and was plant superintendent at Ferris Brick Co. until illness forced his retirement several years ago.

General Shale To Spend A Million at Coral Ridge

Enlargement and improvement at the former Coral Ridge Clay Products Co., Louisville, has been announced by General Shale Products Corp., Johnson City, Tenn. General Shale bought the Coral Ridge plant in 1956.

Part of the plan for expansion hinged upon court approval to extend a conveyor system across the old National Turnpike road, with the conveyor to carry clay from new pits to the plant. Also included in the plan was the right to extend a private railroad spur across the Turnpike.

Upon court approval of these plant needs, plans were then formed to go ahead with the expansion program.

$30,000 Fire At Whitacre-Greer

A 60 x 180' drying shed was destroyed by a fire on October 15 at the Whitacre-Greer Fireproofing Co., Waynesburg, Ohio, causing a loss of an estimated $30,000.

Shipping of inventory was continuing, according to plant superintendent Steve Hall. Cause of the fire was believed to be embers from one of the coal-fired kilns.

Robertson Announces Cooksville Appointments

R. K. Robertson, vice president and general manager of the Structural Clay Products Div. of Canada's Dominion Tar & Chemical Co. Ltd. has announced the following appointments: J. J. Coffey as general manager of the Cooksville Co. Ltd., Toronto; H. V. Henderson as assistant to the general manager; and Y. R. Anderson as superintendent of the Cooksville plant.

Coffey was formerly assistant general manager; Henderson was superintendent; and Anderson was technical superintendent.

News of Canada

Lt. Gen. G. G. Simonds is now president of Frontenac Floor & Wall Tile Ltd. and Toronto Brick Co. Ltd. Controlling interest in the company is owned by the German investment firm, A. G. Fur Grob and Fermkeramik.

Juillard Building Products, Ltd., has been granted federal charter of incorporation, with main office at Montreal.

Canada's Board of Transport Commissioners have moved to equalize commodity freight rates, aiming to level off between Eastern and Western Canada rates on some commodities by Jan. 1; the latest move will include building brick, clay, crushed stone, etc. The commodity equalization does not apply to the Atlantic provinces since legislation has exempted this area.

Armand R. Denault has been named director and joint general manager of **LaSalle Builders Supply Ltd.**, Montreal, with Georges Nadeau being named a director.

Robert E. Nuth has been appointed secretary-treasurer of both the Builders' Exchange, Montreal, and the Building Trades Joint Committee, Montreal.

Normand G. Robidoux, formerly advertising manager of Hewitt Equipment Co., has been appointed co-ordinator of the sales department and as advertising manager, **LaSalle Builders Supply Ltd.**

TRI Refract. Problems Conference at OSU

The Refractories Institute has announced the program for the Conference on Refractories Problems to be held at Ohio State University, Columbus, on Nov. 21-22.

The program will include such talks as "Present Employment of Ceramic Engineers" by W. L. Fabianic of H. K. Porter; "Place of the Refractories Industry in the Economy of the Nation" by Wayne Fay of General Refractories; "Present and Future Ceramic Engineering Problems in the Refractories Industry" by T. E. Ralston of Harbison-Walker Refractories.

Other speakers will include C. A. Smith of Mexico Refractories; John L. Carruthers of OSU; C. L. Norton of Babcock & Wilcox; F. H. McRitchie of Mellon Institute; S. M. Phelps of Mellon; E. A. Williams of North American Refractories; W. S. Lowe of A. P. Green Fire Brick; Dr. J. Otis Everhart of OSU.

Among events scheduled are a tour of the Ceramic Engineering Dept. and the University Experiment Station of Ohio State.

New Permanent Hot Top Castable

The Refractories Div., H. K. Porter Co., has just announced a new refractory, Permanent Hot Top Castable, which reportedly will increase hot top life and reduce hot top costs per ton of steel produced, the announcement says.

Manufactured at Porter's St. Louis Laclede-Christy works, the PHT Castable is a refractory lining used as a monolithic lining in permanent floating head hot tops. Service life of the average size hot top casting lined with the new PHT Castable is claimed to be 125 heats as compared with 30 to 40 heats when pre-burned refractory shapes are used as a lining.

Benefits reported are reduced maintenance, less labor and less inventory, the announcement notes.

ESCSI Holds Fifth Meet at Atlanta

The Expanded Shale, Clay & Slate Institute held its Fifth Annual Meeting at the Dinkler-Plaza Hotel, Atlanta, the week of Sept. 23.

A highlight of the meeting was the open session on Friday afternoon. Structural engineers from Georgia, Florida, Alabama and Illinois attended. J. J. Shideler, of the Portland Cement Assoc., gave a paper on "Structural Lightweight Concrete" and also showed a movie on "Concrete Facts in Lightweight Aggregate."

Newly elected officers of the group are Otto Frei, of Georgia Lightweight Aggregate Co., president; W. H. Thomas, McNear Brick Co., 1st vice president; Allan P. Taylor, of Kenlite, 2nd vice president; Ben F. Park, Buildex Inc., treasurer; L. A. Thorssen, Consolidated Concrete Products Ltd., secretary.

The ESCSI announced that the 1958 meeting site will be Kansas City, Mo.

Sales, Earnings Up at Pacific Clay

Sales and earnings of Pacific Clay Products, Los Angeles, for the first nine months of the year showed substantial increases over the same period of last year, President John D. Fredericks has announced.

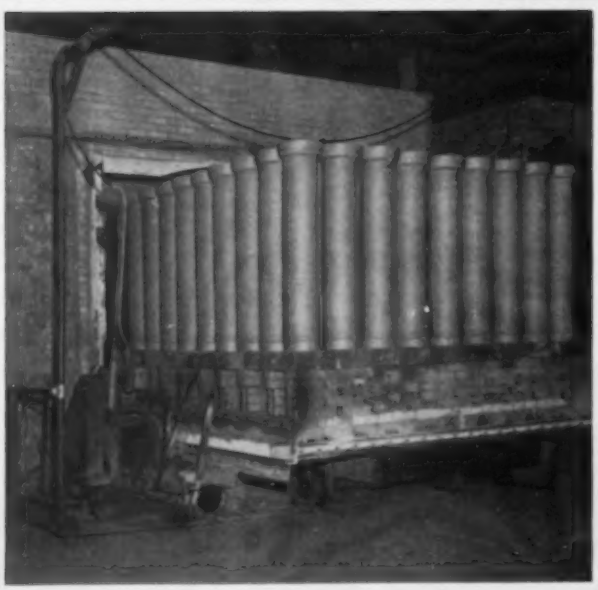
Sales for the period ended Sept. 30 totaled $6.6 million, compared with $6.1 million for the same period in 1956. Net income for the period amounted to $975,973, equal to $1.89 per share. For the same period of 1956, comparable figures were $885,818 or $1.72.

The higher sales reflected greater activity in government, state and county municipal sanitary projects, Fredericks noted, with additional increased demand also in clay telephone conduit.

Also contributing to the increases were the tripling of sales at a company silica sand processing plant at Camanche and the acquisition of Tillotson Refractories Co.

Fredericks reports that a new, second tunnel kiln at the Los Nietos plant has concluded satisfactory test runs, and commercial production was expected by the first of November.

ANOTHER **ALLIED** KILN INSTALLATION



W. S. DICKEY CLAY MFG. CO.

PITTSBURGH, KANSAS • TEXARKANA, ARKANSAS

The name of W. S. Dickey Clay Manufacturing Company is known widely and may be found wherever there are Blue Book listings of sewer-pipe manufacturers.

ALLIED is proud to have continuous kiln units in the Pittsburgh, Kansas, and Texarkana, Arkansas, plants of this excellent organization. Shown above is one of the salt-glazing tunnel kilns recently installed.

FERRO

Allied Engineering Division

FERRO CORPORATION

4150 E. 56 STREET · · CLEVELAND 5, OHIO

American Vitrified Buys Two Pipe Plants

E. L. Miller, President of American Vitrified Products Compan, Cleveland, Ohio, today announced the acquisition of two Clay Pipe plants of the Whitehall Sewer Pipe Company located in Whitehall, Illinois, formerly operated by the Laclede-Christy Division of the H. K. Porter Company.

American Vitrified Products Company is one of the nation's largest producers of clay and concrete pipe and kindred products. The company employs over 1,400 people and last year did over $10,000,000 in sales.

"Acquisition of these plants will be a great asset to our Company and will enable us to reach markets that we formerly could not service due to excessive freight rates," Miller said. In addition to serving our present market area, we will now be able to expand service to the states of Arkansas, Missouri, Iowa, Tennessee, Kansas, and Nebraska."

Company sales for the fiscal year 1956 were $10,148,000 as compared to $9,813,000 for 1955. Net income for the year was $605,000 equal to $3.75 per share, compared with $513,000 or $3.19 a share for the preceding year.

"Sales for our fiscal year, 1957, which ended October 31st, indicated that the company will again reach all time highs," Miller added.

First Miss. Lightweight Plant To Begin in Early '58

The first lightweight aggregate producing plant in Mississippi will go into production at Jackson by early 1958.

W. H. Day, president of Jackson Ready-Mix Concrete, has announced that the plant is 75% completed and will be operating by January. Day stated that the plant will be capable of producing enough lightweight aggregate to supply all industry requirements in the Mississippi area.

The company geologists have reported that the plant has a 500-year supply of materials in the pit. The plan design has allowances for addition of extra kilns when desired.

First Buff Being Made in Nova Scotia

The only commercial-size deposit of buff clay in Eastern Canada is now being developed at Shubenacadie, Nova Scotia with brick production expected to be several million annually.

A joint announcement of this was made recently by R. H. Shaw, president of L. E. Shaw, Ltd., and by the owner of the deposit, Charles Lawlor.

Research work is being done to check on the promise shown by the clay for use in fire brick manufacture also.

The buff brick is being manufactured at the Lantz and New Glasgow plants of the Shaw company, with the clay evidently being shipped in.

NEWS OF THE INDUSTRY

CSPA Names Cochran President

A. G. "Ted" Cochran has been named president of the CSPA, as of Nov. 1. He succeeds Paul R. Rutherford, who has resigned.

Downing, Sells Appointed by Sphar Brick Co.

Announcement of two appointments have been made by President F. H. Peters of Sphar Brick Co., Maysville, Ky. The appointments were made in preparation for expanded production and more competitive selling next year, Peters said.

Gene Downing, who has been with Sphar since present management took over in January, 1956, was made secretary and board member. He's in charge of the company office and sales.

William Sells, Jr., recently acting in a consulting capacity, was announced as board member and vice president, as well as plant superintendent in charge of manufacturing. Sells formerly was with General Shale.

Quarter Net of $24,000 at Dallas LW Agg. Co.

Ralph B. Rogers, president of Texas Industries, Inc., Dallas, has reported net income of $24,814 for the firm's subsidiary, Dallas Lightweight Aggregate Co., for the three month period ending Aug. 31.

Sales for the same period were $150,520.

Redondo Tile Co., of California, reported net income of $17,975 for the same period on sales of $452,260. Redondo is another subsidiary of Texas Industries.

PERSONALS

Woodward, Greiner Co., Montreal, has taken over the account of the **Laprairie Brick & Tile Co.**, Que., formerly with Quebec Advertising.

J. E. Milliken has been promoted to general foreman at factories 3, 4, and 5, Parral, Ohio, according to an announcement by Robinson Clay Products Co., Akron.

Henry Robinson has been named assistant production superintendent, under **R. E. Arnold**, production superintendent, according to an announcement by Robinson Clay Products Co., Akron, Ohio. Prior to his new appointment, Henry Robinson had been with the company engineering department.

Robinson

Eversole

Alfred D. Eversole has been appointed to the sales staff in the home office of W. S. Dickey Clay Mfg. Co., Kansas City, according to an announcement by Joe Mason, general sales manager. Eversole for the past five years has been supervisor of shipping at the Dickey plant in Pittsburgh, Kans.

Walter M. Colley has been elected secretary-treasurer and chief financial officer of Pacific Clay Products, Los Angeles. He has been treasurer since 1952.

Richard T. Spencer has been appointed district manager, Detroit office, of Natco Corp., according to an announcement by **Harry F. Toner**, general sales manager.

The appointment of **Roland Lindstrom**, formerly with SCPI, as architectural salesman for Builders Brick Co., Seattle, has been announced by **R. C. Houlahan**, president. Lindstrom replaces **Gene Salveson**, who was named promotion director of the firm.

Promotion of **Charles Wallick** to plant superintendent of Factories 3-5, Parral, Ohio has been announced by Robinson Clay Product Co., Akron, Ohio.

Park Taylor has been named manager, Natco Clay Pipe Sales Div., Brazil, Ind., according to an announcement by **Harry F. Toner**, general sales manager of Natco.

Paul T. Talbott, district works manager for the McLain Fire Brick Co., Refractories Div. of H. K. Porter Co. Inc., has announced the following three appointments: **John Henthorne** as burner foreman; **Harry Harris** as loading foreman (both at the Irondale Works); **Dale Rose** as burner fireman.

Carey E. Lindsay, general manager of the Niles (Ohio) Fire Brick Div. of Mexico Refractories Co., has been appointed Chairman of the 1958 Factory Operators Meeting of TRI, to be held in Pittsburgh, Pa., March 6-7.

Ernest M. Hommel has been elected president of the Pennsylvania Ceramics Assoc., at a meeting held at the Mellon Institute recently. Other officers elected were **John Clark**, first vice president; **George Reuning**, second vice president; and **James K. Martin**, managing director.

Obituaries

J. Cliff Wilson—78, retired superintendent at Hickory Clay Products Co. and several other plants, died at his home in New Philadelphia, Ohio of a heart attack on Sept. 25.

Floyd M. Russell—64, traffic manager of General Fireproofing Co., Youngstown, Ohio, died Sept. 29 after a week's illness.

Robert G. Rogers has been appointed vice president-sales for the Structural Clay Products Div. of Dominion Tar & Chemical Co., Ltd. of Canada. Rogers will direct all of the sales operations for Laprairie Brick & Tile, Cooksville Co. and for Interprovincial Brick Co.

SCPI's promotion people are doing an interesting job of promoting recordings of the A. I. A. Centennial Concert recording. Record-size and record-shape pieces have been mailed out, suggesting that the record be given as Christmas presents, both to friends and customers. The record covers the combined lecture-concert, weaving together the history of music and architecture. The record, pressed by RCA Victor, is available only from SCPI. Cost is $3.00, low for a 12" LP record.

We've heard some interesting thoughts on the future of our industry from Boyd Miller, president of Miller Equipment Co., that we thought would be of considerable interest to our readers. Quoting Boyd, "We have recently completed a 20,000 sq. ft. expansion to our fabrication facilities. . . . Many automatic machines have been purchased and installed to facilitate fabrications of all of our products."

"It is the contention of Miller Equipment Co. that the clay working industry will continue to grow and move forward. Motivation of this belief has led us to make this expansion. Methods to lower production costs mainly through automation has prompted us to install this automatic machinery. Our confidence in the future of the industry, through improved developments, is our foremost thought in continually modernizing our operations. . . . To this extent, research activities made chiefly by SCPRF have revealed that clay products can keep pace with other building materials and it is necessary that industry keep the pace with the research program.

"This is where firms like ourselves must step in. These developments would be of no value if left in the research stage, the end product has to be made available. Industry itself has to help in promotion and actual construction of needed facilities to carry the industry forward."

There was more in the letter, but this is enough to give you the idea of Miller. Space doesn't allow inclusion here but some more of these ideas follow along the same line of thought.

A very interesting promotion piece is one being used by Des Moines Clay Co., to pass out to school children after plant tours. The new two-color booklet has four pages, well laid-out and printed, showing all the steps in brick production plus other information about the history of brick, about Des Moines Clay, etc., all signed by general manager Bruce Paterson. Attached to the back of the book is a lollipop, to be eaten after the kids are back on the bus. One aim of the book is to get the same information across to their parents when the kids return home after the tour. Des Moines is doing a very nice job of encouraging tours as a public relations tool.

Dun & Bradstreet have just released a study of business failures, broken down by region and by type of business. We're happy to note that the combined "Stone, Clay & Glass" classification shows a low failure rate, in fact the lowest of the 14 categories listed. Failure rate was 30 per 10,000 operating concerns for "S, C & G."

Here's some brief notes from SCPI around the country. Bill Avrutis notes that the Chicago office of Region 5 has moved offices, within the same building; new address is Suite 2103, of the Builders Bldg., 228 N. LaSalle. A new member of SCPI, reports Promotion Director Len Kirsten, is Marion Brick Corp., Marion, Ohio. Eleven new members have been added to the board of NADD, giving more complete national coverage. To get back to Region 5 for a moment, there's a new folder under their name, describing the use and advantages of clay tile floors, showing construction methods, etc.

We'd like to correct a mis-understanding about that mortarless-brick backyard barbecue item run in last month's Yard Talk. We were under the impression that it was from Dean Ramey of the Miss-La manufacturers association. Dean wrote us, told us that the material was really developed by North Carolina's Bob Foster. So credit shifts for a good idea to Foster, for coming up with another good promotion piece . . . and credit to Ramey for recognizing the value.

T. J. Evans III, president of Evans Pipe Co., Uhrichsville, Ohio, has been appointed a trustee of the Ohio Manufacturers' Assoc . . . William S. Sells, General Shale Products vice president, has been elected member of the board of Education at Johnson City; unusual part of this is that a local paper wrote a nice editorial praising Sells and stating a belief "he will be a great asset."

In further line of civic statements, the Harrisburg (Ill.) city council recently passed a resolution hoping that the Harrisburg Brick & Tile Co. plant will be rebuilt soon, and offering community cooperation. The plant was destroyed by fire some time ago.

The Esso Ramtite Corp. plastic firebrick plant at Siloam, Ky., is making good progress in construction, we hear, with the only delay being the awaiting of steel. The company will have five large silos, two of them 60′ high with diameter of 10′ and 12′ respectively, to be used in flint clay storage. One of three kilns planned is under construction; plant may eventually have 16.

To close for this month, our story on the SCPRF panel house last month was done so early that no photo was available of the completed house. Now that the main story has been told, we'd like to run the picture herewith of the house as it looked when virtually complete, at least as far as the exterior goes. It's a good-looking house as you can see.

Mixing bulk materials? Read how . . .

Brimming Buckets Solve This Problem For Robinson Brick & Tile Company, Denver

From flour-fine, tightly-packed particles to chunks two feet in diameter—that's the mixing problem faced by Robinson, largest brick and tile manufacturer west of the Mississippi. Fourteen different clays are stockpiled around a central batching area, to be mixed as needed by a Michigan Model 175A Tractor Shovel. *Only the Michigan's ability to load a full bucket every time keeps these ingredients in correct proportion.*

Demonstration sells machine

Loaders formerly used were a headache; operators got ¾ bucket out of one pile, only ½ bucket out of another. Result? Improper proportions, production slow-downs. Moreover, the old loaders had the wrong type of bucket action, couldn't mix ingredients on the floor before loading them into the grinders. Then the owners saw what a Michigan could do—right in their own plant. They bought it!

Mixed 720 tons daily

Today the *one* 2¾ yard Michigan Model 175A Tractor Shovel has replaced *two* old-style loaders. It moves and mixes 720 *tons* of clay per day, works a 72-hour week under all conditions—from choking dust in summertime to deep snow and mud. Its operator can now *keep six mixes going* on the floor at all times! Unexcelled breakout force, low-level tip-back and low-level carry assure a *full* bucket *every* time . . . greater speed and maneuverability keep material flowing from stockpiles scattered around a 200-yd radius up to 50 yds away from the grinding plant.

Now's the time to find out how Michigan can hike output, cut costs *for you*. Your local Michigan Distributor will be glad to arrange a demonstration in your plant— *you pick the job!* Six models available, from 1⅝ cubic *feet* to 2¾ cubic *yards*. Thirty-eight different buckets and attachments to fit precisely your requirements. Finance plans suited to your investment program, too—including the popular Clark Lease-Purchase Plan, which puts one or more Michigans to work for you without a penny of capital.

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2455 Pipestone Road
Benton Harbor 26, Michigan
In Canada: Canadian Clark Ltd.,
St. Thomas, Ontario

CLARK® EQUIPMENT

How Des Moines Uses Additive A To Make Good Operation Better

Plant uses new product to control scumming, get greater green strength; makes package hacking on cars, fork-loading of kilns more feasible.

Increased efficiency of an already good operation and more No. 1 brick in a year's production with the use of Additive-A is the experience of the Des Moines (Iowa) Clay Company.

What is Additive-A? It's a clay treatment comprised of several corrective chemicals, manufactured by Kimberly-Clark Corp., Neenah, Wis.

"What's the one biggest reason for our using Additive-A? Well, I think it would be to get a higher quality, more saleable finished product. Our plant was a good operation before Additive-A. The additive just improved that operation more, so we're making more No. 1 brick per ton of clay."

That's the answer given by Bruce Paterson, general manager of the Des Moines plant, when asked to sum up the main reason for his use of Additve-A.

Benefits of the additive at the plant include a reduction of waste, and therefore a resultant increase in production; increased green strength; control of scumming; reduced dryer loss; improved clay workability and many side effects such as longer die life, more output for the same power consumption, and others.

Used For Two Years

Des Moines has been using Additive-A for over two years in production, with a year of testing preceding production use. Their monthly production average is 3,000 tons including output of both red and buff brick; normans and SCR brick.

The additive is used 100 per cent on brick production at the plant except for some specialty items of controlled-scum nature. The additive can't be used on these products since it would eliminate the scum effect, thereby elimining the product.

What Is Additive-A?

Additive-A is a brownish liquid. It's thicker than water, but easy flowing. It is completely water-soluble, so it creates no problem when it gets on clothing or hands of the workers. Even after the additive has dried, plain water will easily remove it.

Additive-A is non-corrosive, nontoxic and (undiluted) virtually odorless.

The Des Moines Clay plant operates with 11 periodic kilns, all gas fired. A large part of their production is strapped, with mechanical handling extensively used; all kilns are loaded and unloaded by fork.

The Additive-A is put right in with the pugmill water. The plant uses two F-R-H Jr. machines and a Bonnot pugmill for double-pugging.

Des Moines Operation

The additive is stored just outside the mill room in an 11,000 gallon steel tank. This tank is one that the plant had used for some time for other storage. When the Additive-A was put into use, the tank was moved to its present site. Because the tank is outdoors, to avoid slower flow during cold weather the tank is rigged up with gas-heating unit underneath to keep the additive in the tank bottom easy flowing. The additive slows up some in cold weather but doesn't seem to thicken enough to stop flowing even in below-zero weather.

A simple pump unit is used to move the additive from the tank to the pugmill, with rate of flow controlled by varying the speed of the pump. Approximately a gallon of the Additive-A is used per ton of fired clay. This rate is varied, according to conditions, from 3 to 5 quarts of the additive per fired ton of clay. An excess of Additive-A does not seem to have any detrimental effects on the ware, nor any great increase in benefits. As to where the point of diminishing returns take effect is an individual plant decision.

The Additive-A greatly reduces the need for water, since it has a wetting-agent effect. Kimberly-Clark reports that one plant (not Des Moines) has cut water use from 8 gallons per minute to 5.

Plasticity of the clay is increased, despite the smaller amount of water. This would seem contradictory, but that's the way it works. Des Moines also notes that there is better control of plasticity.

The Additive-A has a strong lubricating effect on the clay and the col-

Interesting demonstration of clay strength shown by Manager Paterson, and Arch Gmeiner of Kimberly-Clark. The trimming off the column can be stretched out a considerable distance.

umn. This, for one thing, cuts column heat way down. It also increases life of pugmill knives. The combination of less heat and better lubrication considerably increases life of dies and liners.

In the general experience of Kimberly-Clark at Des Moines and elsewhere, pugmill operators usually get their mix too soft at first, not realizing the immediate effect the additive has on clay and column. The pug men like to use the product because they get a better mix with less fluctuation.

Although Des Moines is still using the two pugmills, they now believe they could eliminate the use of one if they desired.

Allows Easier Hacking

At the cutter, greater life in cutting wire has been noticed. Paterson says, "We never change all of the cutter wires except on major overhaul but replace wires as they break during production."

The plant has altered its hacking pattern some since addition of the "A." Paterson pointed out that the plant now hacks a flat course over the feet.

The brick is hacked on the dryer car in a package, designed for later handling by the fork. The plant used to re-hack after drying, because of cracking and similar troubles, but this has now been eliminated.

The general manager pointed out that Des Moines had been hacking in similar fashion before Additive-A was adopted. He summed up the effect on hacking in this way: "Additive-A can increase the possibility of successful package hacking."

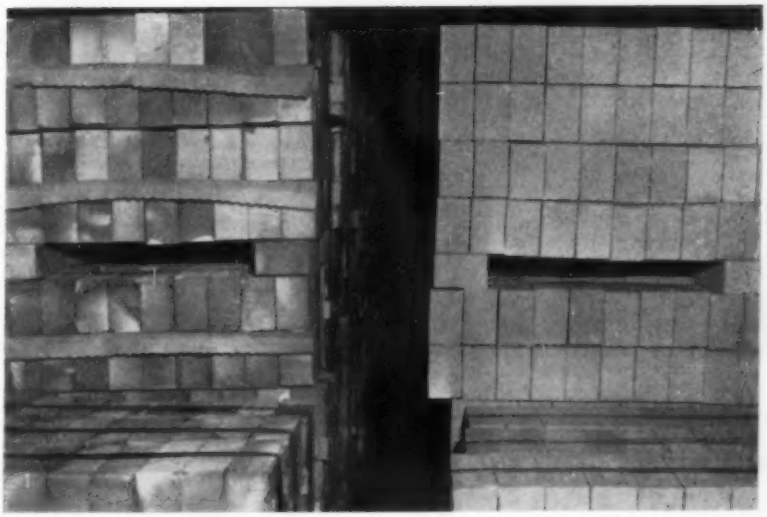
SCR brick and normans, because of their greater size, had been troublesome at times in cracking. The problem has been just about eliminated through the greater strength that the "A" gives in both green and dried product.

Reduced Dryer Losses

There has been no direct change in drying cycle at Des Moines, Paterson said. The main effect of the additive is in better drying control and faster drying. All brick coming from the dryer are now thoroughly dry which means that they can be mechanically handled more easily with less damage. Because of this and reduced dryer cracks, the plant is actually getting more top grade brick from the dryers —even though the cycle has not been changed.

Paterson thinks that drying time could be speeded up some. They're not interested in this at the moment because the plant has excess dryer capacity. It could be a valuable point for another plant where kiln capacity exceeds dryer capacity.

Dryer losses have been reduced "tremendously" Paterson reports. They've been able to eliminate one man from sorting the bad brick from dryer cars. Because of greater strength, hack marks have been noticeably reduced.



Package at left, without Additive A, shows more chipping than does the one at right which has Additive A. Both units were packaged in the SCR Package Line of SCPRF, recently installed at Des Moines.

Edges and corners on the brick are firmer and cleaner.

The plant uses Hyster and Clark lift trucks with Bickerstaff attachments. Two hacks on the dryer car are put one-on-another to form one large package. The fork truck then moves the pack right into the kiln that's being loaded.

Better Feet Brick

The past problem at the Des Moines plant was in the feet brick of these packages. As the fork attachment squeezed, some feet brick broke causing trouble in both pack handling and kiln setting.

With the strength from the Additive-A, this problem with the feet has been just about nil. In fact, Paterson says that it's hard now to tell the feet brick from the others.

Fork loading was done before "A" at Des Moines, saving a lot of time and manpower. The benefit of the "A" on this operation has been to smooth it out and to speed it up, and to make fork-loading of kilns really economical.

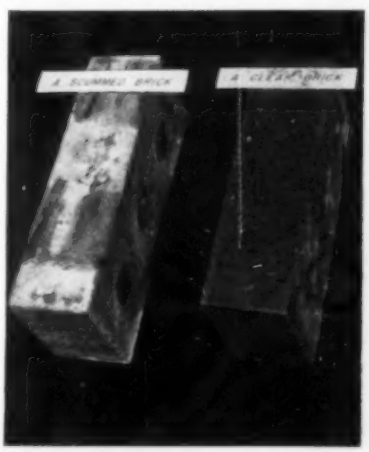
Because the feet brick are in better shape and stronger, it's easier and quicker to set the kiln. Although batts or broken brick from the kiln were never any problem at Des Moines, the negligible amount has been further reduced.

Stronger Fired Brick

Fired brick is less brittle, when Additive-A is used. Two packs side by side, one of "A" brick and one without additive, show more chipping on the non-additive brick.

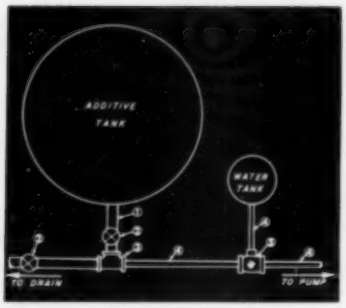
In other points, Des Moines has noticed little difference in shrinkage since using Additive-A. One reason for this is that shrinkage has never been a problem at Des Moines. Using less water would have some effect on the amount of shrinkage.

(Continued on next page)



This shows the effect of Additive A on scumming.

Since clays vary, amount of additive may be changed to get better results.



Numbers on "A" supply arrangement are 1, 2" galv. pipe; 2, brass gate valve; 3, galv. tee; 4, 1" galv. pipe; 5, 2 port, 3-way valve, brass.

DES MOINES Continued

Des Moines similarly has never had any lamination problem. The additive, at other plants, goes a long way toward curing lamination trouble by giving a better mix and an easier-flowing column that's more homogeneous.

Paterson reports that the use of Additive-A has allowed somewhat more relaxed control throughout manufacturing since many operating problems become less critical when using Additive-A.

Colors have not been affected by Additive-A which completely burns off in the kiln leaving no residue to effect colors.

Additive-A can eliminate or control scumming on average clays, as at Des Moines. In cases of very bad scumming, or at bad times of the year, other anti-scumming agents can be added, although the amount will be reduced over non-Additive-A conditions.

To more-or-less sum up, the Des Moines plant and its men seem very progressive, business-like, and efficient. The plant is operating the SCPRF "SCR Package Line"* automatic packaging machine; doing considerable experimental work; and is exceptionally clean and well-kept.

To hark back to our opening lines of this story, the overall main effect of the Additive-A has been to increase efficiency of an already good operation; to get more #1 brick in a year's production.

As Bruce Paterson says, "It boils down to this. For several years we have discussed whether Additive-A is worthwhile but we are still using it. If we didn't think it worthwhile, it would be easy to turn off the valve."

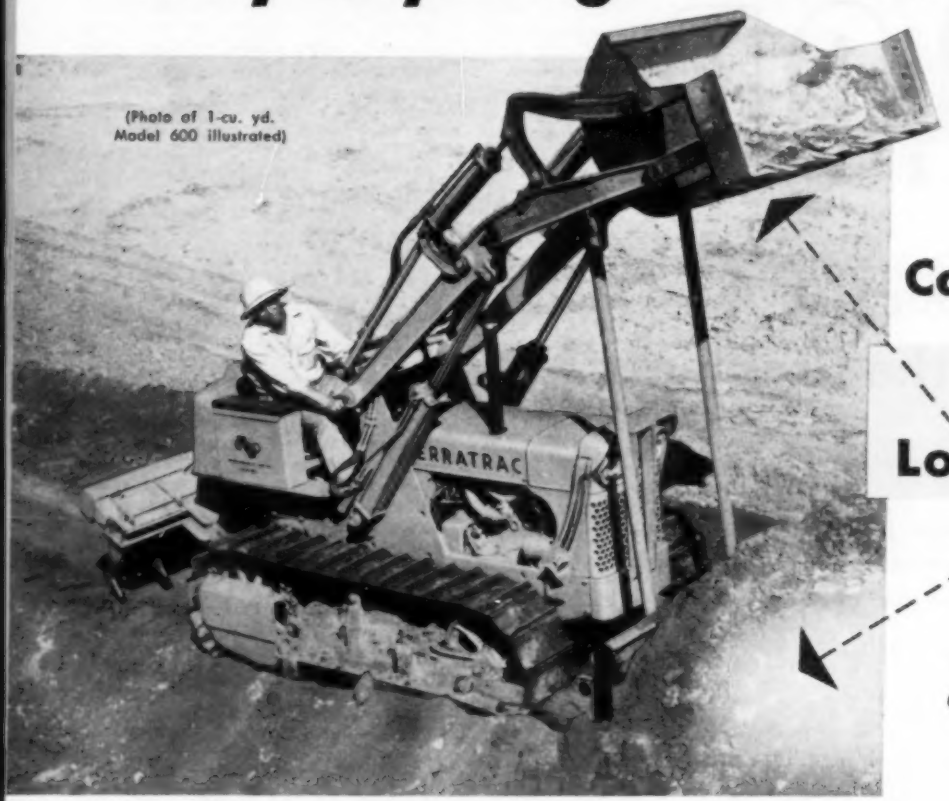
*Reg. T.M., Pat. Pend. SCPRF.

Des Moines Supt. Oscar Atchison with Paterson.

Arch Gmeiner looks over carload of brick.

Old storage tank was converted to use for additive storage. Hose on side shows level of fluid.

Why buy 2 rigs...when 1 will do?



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COLOR

How You Can Use It - - - And What the Problems Are

A report on the several ways to add color to your product; the manufacturing processes and problems; what methods are best for your operation.

by
Thomas D. Carnahan
B. F. Drakenfeld & Co.
Washington, Pa.

The coloring of brick and structural tile is not a new art, but in recent years it has enjoyed a popularity not heretofore known. The demand for color has not been confined to the heavy clay industry, and manufacturers of porcelain enameled curtain wall panels have been quick to cash in on the new demand for color, and one can find all manner of colors in new hotel, school and commercial construction.

Brick and tile manufacturers, in many cases, will not be able to compete with porcelain enamel in variety or brightness of color, but there still are available to the heavy clay industry many desirable colors, and in this paper I wish to point out the various methods for applying color and discuss them briefly.

In all subsequent discussions the term "stain" or "pigment" will connote a manufactured ceramic pigment and the discussion will be limited to coloring by such pigments.

Two Basic Methods

From a strict coloring standpoint, color may be achieved by two basic methods. By one method the color may be incorporated into the clay to produce an article which is uniformly colored throughout. This is a very desirable and practical coloring method, that is for the dinnerware or floortile industry, but it really can command only passing recognition as applied to heavy clay products.

Body stains are comparatively high-priced and will cost between $.40 and $1.00 per pound and sometimes more. Assuming that 5000 lbs. of clay will make 1000 brick, a 1% stain addition could cost between $20.00 and $50.00 per thousand brick.

Even if cost were no problem, the proposition of coloring a red burning shale or even a buff burning fire clay is a forbidding one. The iron and titanium impurities in a fire clay are enough to seriously alter the fired color of most ceramic pigments, and browns and tans, and sometimes a blue and a green, are about the only desirable shades that can be obtained. Of course, a manufacturer of a red shale product has no hope of making anything but a darker brown or black by such a coloring process.

Surface Color

It does not take much imagination to see that a successful coloring process must be built around the idea of coloring only the product surface. Colored glazes have been popular over the past few years for adding color to brick and structural tile, and a glaze, properly formulated, gives a good looking, long lasting surface, capable of producing quite a variety of colors.

The coloring of glazes involves a bit more than merely adding a few pounds of stain to a mill of glaze. The end color is influenced by a number of things and I will attempt to cover as many of these factors as possible. Glaze formulation is of prime importance and will be a good place to start.

On occasion, we at Drakenfeld conduct evening plant tours for interested groups, and they generally are church or school groups, people not familiar with ceramics or ceramic colors.

I do not believe that many of them come to our place with the idea of seeing a paint factory and that our art involves the blending of colored powders. We try to point out that glaze coloring is not a matter of simply choosing a colored powder and mixing it with a suitable vehicle.

Glaze coloring, in reality, is the result of some high temperature chemical reactions and the wrong chemistry can give the wrong color, or no color at all.

Mostly Buff Clay

Practically all glazed brick and structural tile are made from a buff burning, low grade, fire clay firing in the general range of cone 3 to cone 8, and it is the old Bristol glaze which is used in this temperature range. At the low end of this firing range, we find a number of lead bearing glazes but, basically, all of them contain one common ingredient—zinc oxide.

Zinc oxide, of course, is a very active flux in this temperature range, and, equally important, it determines in many cases which pigment type must be used to give a specific color. If one glaze component were to be chosen for having the most effect on colors, zinc oxide would certainly be the choice.

Fortunately, the majority of the colors made by the brick and structural tile people are colors which are best achieved in a zinc base glaze. However, since some stains do not develop proper color in a zinc glaze, most plants wind up having a second glaze, a lime base or zinc-free glaze, for these few stains.

Presented at the Southwest Section, ACS, at Mineral Wells, Tex., in July, 1957.

On the glaze stain side of the picture, there is an adequate variety of stains available, and quite often one color can be produced with two or more different stain types. For instance, yellow may be made with either a zircon vanadium yellow or a tin vanadium yellow. The zircon vanadium yellow is about half as costly and about half as strong as a good tin vanadium stain.

In general, the tin vanadium yellow is used for the strong, bright yellows and the zircon vanadium yellow is used to best advantage in the pastel ivory and cream range. Both stain types are quite stable and give less color variation than some other stain types.

Unlike some other stains, color stability of yellows is not improved by high stain additions and these stains may be used successfully in either the high range or the low range of stain additions.

A stain similar to the zircon vanadium yellow is the zircon vanadium turquois. This may be used by itself to make a turquois blue or it may be mixed with yellows for intermediate shades of green. Neither the turquois nor the two types of yellows are much affected by glaze composition. They are well suited to a zinc glaze and are generally used in such.

Tan Shades

Tan shades may also be made with two different stain types. The chrome iron zinc tan is popularly used, sometimes in conjunction with a zircon vanadium yellow, and should always be used in a zinc base glaze. Chrome iron zinc tans and browns probably give more color shading problems than any other type of stain, but the stains show a lesser amount of color variation in zinc base glazes where the stain content is not too low.

In our color matching we prefer to use a 2% or 3% tan addition rather than .5% of a stronger brown to match a given color, and our only purpose is to improve color stability.

Another method for making tan colors is to use a chrome alumina type tan stain. This is essentially a chrome alumina pink which has been modified with sufficient iron to give it a tan coloring. Mill additions run somewhat higher than with the chrome iron zinc tans mentioned above, but we feel that color stability is much improved.

The chrome alumina tan must be used in a zinc base glaze and the same general glaze recommendations which apply to chrome alumina pinks, described next, will also apply to these chrome alumina tans.

Pink Colors

Pink colors may be made with two types of stains, the chrome alumina pink and the chrome tin pink, but only the chrome alumina stain finds any use in structural tile glazes. The chrome tin pink is bleached out by zinc and talc additions to a glaze and is beleaguered by a myriad of defects which make color control a real headache.

On the other hand, the chrome alumina pink is quite stable although it is suited only to a zinc base glaze. These stains will probably give a more or less satisfactory color in most zinc base structural tile glazes, but we should mention some of the factors that should be considered if one is attempting to formulate a glaze especially suited to such stains. Basically, a good chrome alumina pink glaze contains enough zinc oxide to develop the color and enough alumina to prevent solution of the stain.

But as to the calcium, it should be kept sufficiently low as to prevent discoloration of the pink. All three components must be adjusted for best color development. I have seen glaze trials where the zinc content has been increased in small increments from 4% to 10% with the strength of the fired color increasing with each zinc addition.

In other tests I have seen where a .5% alumina hydrate addition to a glaze has almost doubled the strength of the resulting pink color. Even when the zinc and alumina are at a satisfactory level, it is possible for the calcium to be at a high enough level to partially discolor the pink. Another thing that can be very confusing is an apparent dissimilarity between so-called equivalent chrome alumina pink stains from different stain suppliers.

Numerous times we have found that a glaze which is well suited to one stain is not suited to another stain, but that a slight zinc or alumina adjustment will bring the glaze in on color when the stain replacement is made. So, in doing your experimenting with colors, attempt to establish which glaze components affect color and then try to work out a balance between those components and the stain being used.

Gray stains can be a troublesome lot but one consolation is that there are quite a variety to choose from. Some plants make their own gray stain simply by adding small amounts of cobalt, chrome, and iron to a highly opacified glaze. Other plants buy a prepared black stain for use at a low percentage.

We do not recommend either of these practices since small additions of very strong stains constitute quite a batching problem. A better way, in our opinion, is to use a calcined gray stain at mill additions of 1% to 5%. There are several types of gray stains available but the most important, as far as we are concerned, are the tin base grays and the zirconium silicate base grays.

Tin grays are the more expensive, are subject to chrome flashing, and tend to be magnetic, which can be a nasty feature if the glaze is run through a magnetic filter.

On the other hand, zirconium silicate base grays have a tendency to fire out quite blue in some of the high zinc, high alkali glazes common to this part of the industry. It is, therefore, difficult to predict which gray is best, and each individual situation will determine what type of gray should be used.

Blue Green Stains

Cobalt chrome bluegreens may be used either at fairly high percentages to make the darker trim colors or they may be used at low percentages to give pastel shades. Some of the older blue green stains are subject to discoloration in zinc glazes but several stain suppliers, including ourselves, now offer an improved version of the cobalt chrome blue green which is quite stable in zinc glazes.

Chrome greens, or the dark forest greens, can be bad actors for two reasons. First, they must be used in a

(Continued on page 74)

About T. D. Carnahan

Mr. Carnahan attended Geneva College for two years and Ohio State University for three years, receiving a Bachelor of Ceramic Engineering degree from the latter in 1950.

Since graduation, he has been with B. F. Dakenfeld & Co., working exclusively in their Claywares Colors Dept., working both in sales and on development projects in their laboratory.

View above is toward shuttle from end of sintering machine. Below is view of 24" belt from sintering machine and 24" shuttle belt to raw cake storage.

New "Hot" Belt Gives Longer Life for LW

Silicone rubber, woven wire combined in belt to give much longer service in handling hot cake, fines in lightweight aggregate plant operation.

Many plant operators are confronted with a material handling problem wherein a suitable hot materials conveyor of the belt type would be advantageous. The handling of hot sinter cake and hot return fines from a traveling grate type of sintering machine very often presents this type of problem because of the very abrasive nature of the materials to be handled.

The Onondaga Brick Corporation of Warners, New York, manufacturers of expanded shale, incorporated in the sinter plant layout a collector conveyor belt for the hot sinter cake which in turn discharges onto a shuttle conveyor discharged over a reclaiming tunnel.

This system was chosen to eliminate the use of clam shell type of handling from a pit for the hot sinter. With conveyor belts of the rubber, neoprene, or hypalon types, only by keeping them wet with water was any degree of belt life achieved. Fiber glass fabrics or asbestos breakers made little or no improvement in performance. It might be noted that the cake on the belt when observed after dark had a dark red glow.

A similar problem involving heat was encountered in handling return fines. This material covered the belt with a rather dense layer so that a "baking" affect was produced that soon destroyed belt coverings.

Silicone Rubber Belt

Recently introduced on the market is a woven wire belt impregnated with a silicone rubber. The Onondaga Brick Corporation was selected by the manufacturer, the Wickwire Spencer, Division of the Colrado Fuel & Iron Corporation, as having a type of material handling problem for which this type of belt should be particularly useful, i.e., abrasive material handling with a high degree of heat.

Three of these belts are now in service, (1) 18" wide—65' on centers, (2) 24" wide—110' on centers, and (3) 24" wide—50 feet on centers. Normally these belts are operated on a schedule of 4 hours per day, six days per week. All of the material that has been put over these belts has been dry.

The 18" belt has been in service a little over one year and the 24" belts approximately 6 months; based on performance to date the life of these belts should be a minimum of two years with a good possibility of a 4 years.

No Tracking Problem

To all appearances and performance the belts are endless. No difficulty has been encuntered with tracking the 24" belts on standard 15° troughed carrier idlers. The conveyors are equipped with standard lagged head pulley and plain tail pulleys. Motor capacity was not altered.

The 18" belt has been somewhat difficult to track on troughed idlers, but the manufacturer recommends that this width be carried on flat idlers which, with suitable guide idlers should overcome this difficulty. The belts have a surprisingly good flexibility in all directions.

It should be noted that one of the features of this belt is that when the wires become worn to any certain degree, the belt can be turned over and the under side used for the carrying surface, thus belt life is appreciably prolonged.

There is little doubt from service experience to date in handling hot sintered shale that the life of this new type of belt will easily justify the slightly increased expenditure because of adequate life and low maintenance plus simplified material handling.

Special guide idlers are used at Onondaga.

Material is hot enough to glow red at night. Belt can be turned over for further service when necessary.

Two United Plants Find:

Brickaid Solves Black Coring Problem

Addition of new product also has beneficial side effects such as increased green strength, more stable shrinkage; waste cut, profits increased at Vale, Harrisonville.

"I wouldn't claim that it is a cure-all for all of our problems but you sure can say that it's an awful big help."

Those are the words used by plant superintendent W. C. Francis to generally describe results he's gotten from use of a new product called Brickaid. Brickaid is a completely new product developed by Spencer Chemical Co. which could have great impact on brick and clay products manufacturing.

The new product, as reported on here, was in use at two plants of United Brick & Tile Co. The one where Francis is superintendent is the Vale plant just south of Kansas City; the other is the Harrisonville, Mo., plant with J. L. Lindbloom as superintendent.

Based on the experience of these two operations, it appears that Brickaid can virtually eliminate black coring in many clays; increase the speed of firing cycles; and cut down waste considerably.

In addition, as subsidiary benefits, the product also can have considerable effect in increasing green strength; help make shrinkage more uniform or stable; and have a beneficial effect on lamination problems.

In addition to the above factors, it's been indicated at Vale and Harrisonville that Brickaid is non-corrosive when diluted (as it would be used) and the price for the product seems economically in line with production requirements.

What Is Brickaid?

Brickaid has been developed during the last two years by Spencer as a means to solving the United plant's difficulties, with United making their facilities available for development and testing procedures.

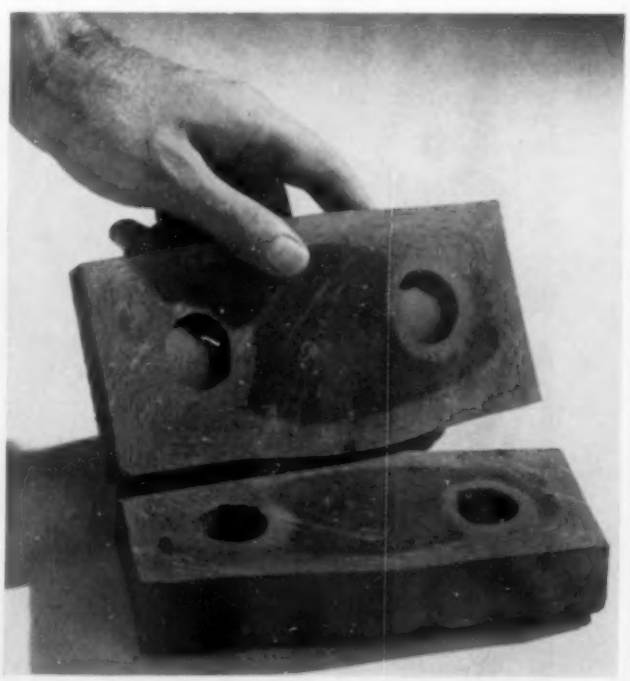
Summed up very briefly, the Brickaid is a liquid product that's added to pugmill water at the rate of one gallon to a ton of raw clay. The Vale and Harrisonville plants have been using the product for some time, with Vale using Brickaid in all normal production for some nine months.

To quickly describe the two plants reported on, the Vale plant produces red, sand face, SCR, romans, normans and other brick with production based on a Harrop tunnel kiln. Lift trucks with Liftall attachments are used extensively in handling.

Harrisonville is a periodic kiln plant, with six new periodics added recently. Primary production here is of a buff brick, with general operation other than firing similar in many ways to the Vale plant.

Superintendent Francis had been bothered for some time with black coring troubles, particularly in the solid red brick being made. Since starting use of the Brickaid the problem has almost disappeared, Francis says.

Aside from this initial aim eliminating or controlling black coring, the side-effects of Brickaid use have been surprising, particularly in the reduced amount of firing time.



Brick above has such bad problem of black coring that center core hole is completely filled-up.

Firing Schedule Cut

The Vale plant tunnel kiln had previously worked on an 80-minute schedule. With the use of this new product, the schedule was cut to 70 minutes and we believe could have been cut to 60 minutes.

Former production has been boosted by 5,000 brick per day and could be increased more if Vale wanted to get more cars in order to handle the increased kiln capacity by going to the 60 minute schedule.

Depending on what you base your profit-per-thousand on, this increased production alone could mean a theoretical profit of up to $15,750 at the Vale plant annually. This figure is after the base cost of Brickaid and based only on the results of speeded-up firing and hypothetical $10 profit per M.

Waste Cut Down

Vale cut their waste product with the use of this product, Francis says, resulting in additional saleable brick. Still another benefit is found in Vale's new ability to fire difficult shapes, particularly with large solid masses, in the tunnel; Francis points out that they're now firing brick in the tunnel that couldn't be handled earlier.

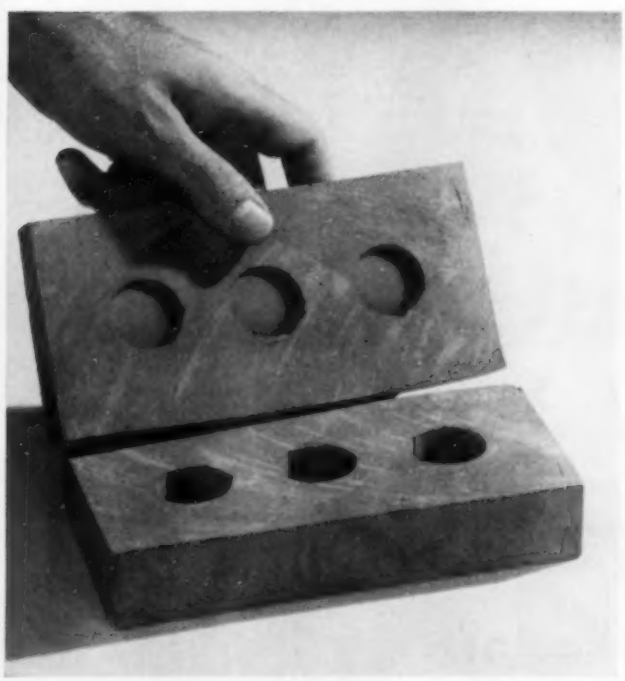
Increased Green Strength

One effect of Brickaid that could be called a bonus is a definite increase in green strength. Spencer reports that the greatest effect on green strength has been with buff-firing shales, such as used at the Harrisonville plant.

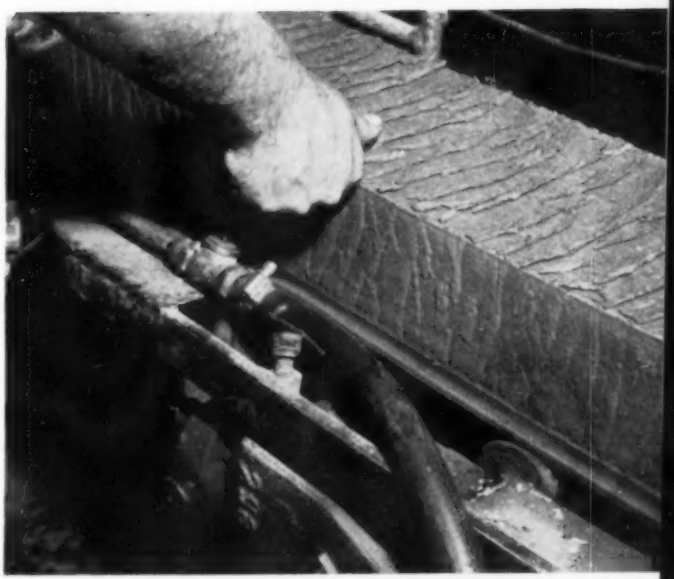
The product also can have considerable effect in reducing chipping and dryer cracking. This effect wasn't noticeable at the Vale plant, which had had no such problem to any extent. It has been noticeable though at other plants using different clays, with test results indicating that these results were obtained at Harrisonville.

Another side effect has been in controlling lamination problems. It seems possible to run a de-airing machine at reduced vacuum with no lamination, according to results Spencer reported to us.

Particularly important to the Vale plant is the fact that the Brickaid use has produced no corrosive effects on equipment such as pugmill, cars, dryers, flues, etc.



Brick here was run on alternate car, with the addition of Brickaid. Other conditions same



Brickaid has considerable effect in strengthening green brick; allows for easier hacking, handling

In reporting on the effects on clays as tested on date, we should note that the Brickaid seems to have a tendency sometimes to decrease plasticity of some clays. This can be overcome with the addition of more water with the contradictory-seeming result that despite more water, drying time isn't affected.

In the effect mentioned earlier on shrinkage, tests and results with various clays seem to show that clays with Brickaid have a tendency to shrink somewhat more but this is counter-balanced by the evidence that Brickaid results in more uniform shrinkage rates, giving greater dimensional stability.

Non-Hazardous

In some other quick points about the product, it's non-inflammable, non-explosive and generally non-hazardous.

There are other benefits and effects of Brickaid but research and testing work hasn't had full-enough time to report on these as yet.

One other effect is a tendency to very slightly lighten the color of buff brick such as made by Harrisonville. This effect doesn't seem to exist on red-burning clays to any noticeable extent. Lightening of color on the buff, of course, could generally be classed as beneficial, and could be controlled if desired.

Simple Equipment

In adding equipment for handling Brickaid in the production set-up, there's only one major item. Because the Brickaid is somewhat corrosive in the concentrated state, a tank that can resist corrosiveness is necessary for storage of the product.

As pictured in the drawing, the Brickaid is run from the tank through polyethylene lines to a flow-meter near the pugmill. The Brickaid is tapped into the pug water line with the only other necessary equipment being a regulating valve for on-off control and to prevent backing-up.

The amount of Brickaid added to the pugmill isn't very critical, Vale has found, with a reasonable amount over-or-under the specified quantity causing no trouble.

Cost of the Brickaid at present is about 30¢ a gallon (40¢ west of the Rockies) with, as we mentioned, a gallon sufficient for a ton of raw clay.

Helps on Periodics

The Vale plant uses their periodics for a relatively small part of their production. However, at Harrisonville, the new product has helped in periodic firing because of the

increased green strength which makes for better kiln setting. It also seems to cut down on the amount of carbon noticeable.

Wide Potential

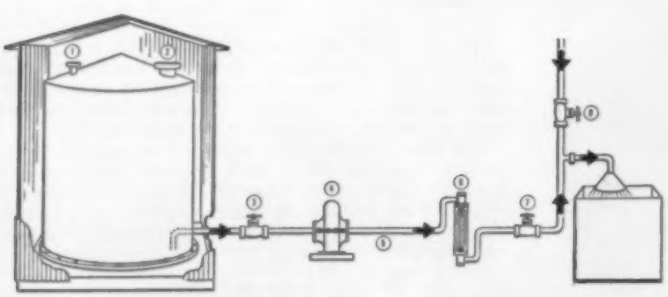
Results with the Brickaid at the Vale and Harrisonville plants of United have been excellent, both superintendents, Francis and Lindbloom, report. It's done what it was supposed to do and given them several additional benefits.

Brickaid itself is still under development work with research underway to determine results with many different clays and to further study the why and how of the things that Brickaid does; and, perhaps to add to the list.

The potential of this product, not only in brick and refractories but in many forms of clay products and ceramics seems to be large. Although it's too early to tell, Brickaid may be an answer to problems that many plant men are trying to solve.

Superintendent Francis talks to Spencer man Willard Bull; below is the set-up used to add Brickaid to clay. Note flow valve.

Superintendent Lindbloom of the United-Harrisonville plant.



Drawing above shows tank set-up. 1) Pressure vacuum release valve; 2) manholes; 3) 1" gate valve; 4) liquid transfer pump; 5) polyethylene piping; 6) flowmeter; 7) regulating valve; 8) one way flow valve.

Brick are stacked from kiln car to six strapping stations. No rehandling. Each cube samples contents of several kiln cars for better brick blend. Stacking jigs have side and back walls for smooth-sided cubes. Each operator works two stacking jigs . . . lift truck removes one cube while operator stacks and straps the next cube. Fork lift trucks approach from outside, left and right . . . move cubes directly to yard or truck.

Signode Helps Kelsey-Ferguson Save $100,000 a Year with New Packaging System

Kelsey-Ferguson is one of the pioneers in the large-scale packaging of brick. All of their 100,000 daily output of brick has been packaged for some time. But an all-new packaging system is saving over $100,000 per year, and producing better brick packs!

The new system, worked out by a Signode field engineer and Kelsey-Ferguson personnel, incorporates the latest improvements in Signode tools and methods. Noteworthy is the fact that $26,000 of the yearly savings come from reductions in the cost of strapping and associated unitizing materials alone. The balance of the savings is in cost of labor.

Heart of the new system is direct stacking from tunnel kiln to the strapping stations, eliminating all rehandling and restacking. This is described in the picture caption.

Use of Signode's fast air-powered strapping tools makes strapping much faster, much easier, and produces correct strap tension every time.

Isn't it time to take a new look at your methods of packaging? A Signode sales representative will be glad to help you do so, and to show you what's new from Signode.

Call him today, or write:

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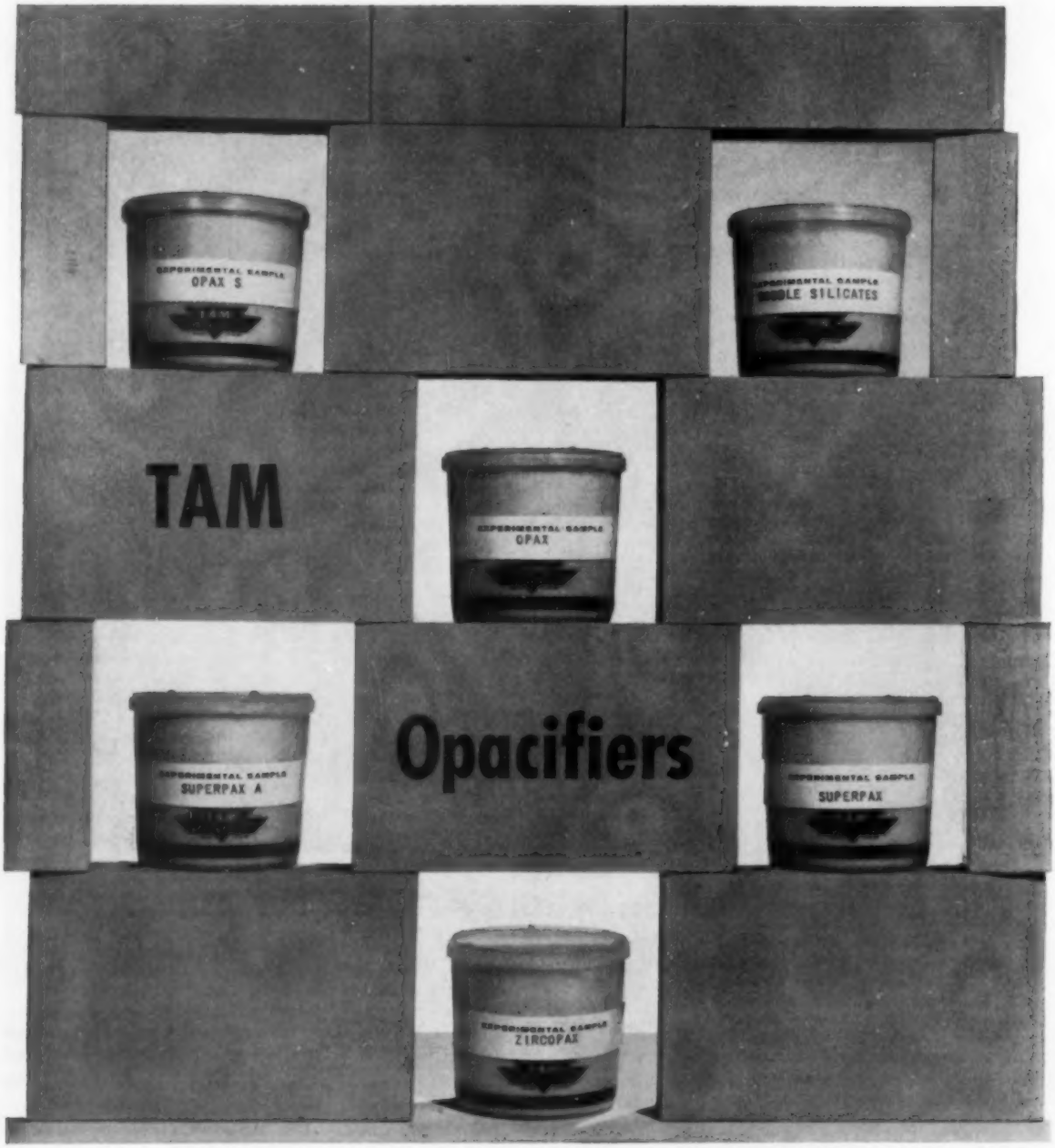

. . . the choice of brick and tile makers

From this complete selection of TAM Zirconium opacifiers, manufacturers of glazed brick and tile can specify the right ones for any particular job requirement. Each has its own advantages in producing opacity, color uniformity or modification, texture control, efficiency and economy. All are produced to highest standards of purity and particle size.

To guide your selection, may we send you trial samples and/or literature. Write our N.Y.C. office.

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Meeting Discusses Colors For Clay

Bob Foster introduces new color method; many papers cover such topics as color types, methods of application, various means of getting varied colors.

Eight approaches to the application of color to brick were described at the Third Plant Operators Forum meeting at North Carolina State College. The three day short course was co-sponsored by Clemson College, Brick and Tile Service, Inc. and Southern Brick and Tile Manufacturers Association. Over fifty plant operators attended the course and heard a number of experts in the field of color lecture on the theory, manufacture and use of color.

H. B. Foster, Manager of Brick & Tile Service of Greensboro, N. C. took the opportunity to announce the completion of the pilot phase of a radically different approach to the application of color. Foster has developed a method that eliminates many problems encountered in older methods of applying colors to red bodied brick.

The theory that has been used to secure a number of colors, which were exhibited, is the spinel theory of crystal development. By the use of suitable materials in a form that would combine with the iron oxide on the surface of the brick several satisfactory colors have been secured. The crystal form of the iron in combination with added compounds determines the color and the properties of that particular combination.

Water or Oil Suspension

The application of the Foster system can be made with a water suspension or an oil suspension. In the case of the oil suspension the clean up chore is more difficult. The colorant can be applied by spraying the column before the brick are cut. The method will work with die skin surfaces or any of the standard textures. After the color is applied the brick can be cut and handled in the normal manner. It has been determined that spraying is the most promising method of color application.

In the experimental work the coloring agents were mixed with the oil used in the lubrication of the column. This did not prove to be too satisfactory as the application of the color was uneven. In this connection it is to be noted that under application of the colorant will result in variation of color of the brick. In some cases this might be desired.

Over-application of the coloring material has no adverse effect as only a certain amount of compound will react and the surplus remains on the surface of the brick as a powder easily removed when the wall is washed.

Since the colorant forms a chemical bond with iron in the brick there is no shrinkage in the ceramic sense. This eliminates any fit problems such as are encountered with engobes and glazes. Since the Foster method does not cause any densification of the surface of the clay body, weather will not be a greater problem than with the uncolored brick, nor any lesser.

As only a limited number of materials will form spinels with iron the colors that have been developed are somewhat limited. Difficulty was encountered in attempts to get acid fast blues. Good shades of green, grey, tan, purple, black, pink, buff and white have been made on a production basis. Foster hopes that the coloring agent in a ready to use form can be offered to all manufacturers before long.

The cost of material was estimated to be $1.50 to $1.75 per thousand brick. The process appears to be well tested as over a million brick have been made using the new technique.

Theory of Color

The short course was of three days duration. Monday, October 7, was devoted to the background and theory of color as applied to the ceramic field. After being welcomed by Dr. Carey H. Bostian, Chancellor of North Carolina State College, the group first heard Dr. Antonios Antonakas of the College Physics department. Dr. Antonakas reviewed the physical nature of color for those attending. An outline of the limits of human color sensation was presented. The modern method of measuring color and the notation that is being used by workers in this field was described.

Following the material on the physics of color F. Carter Williams spoke on "Today's Architecture Demands Color." Williams, who is a practicing architect in Raleigh, told the meeting that color is becoming more and more important to modern designers. By recounting examples of buildings which depend on color to a great extent for effect he was able to outline what color can offer the architect in the design of modern buildings. Acceptance of the owner of today's buildings of color in many hues was described by the speaker.

F. Carter Williams and Bob Foster

George O. Harrell of North Carolina State

the new BOYD PRESS

these improved features mean better brick at lower costs

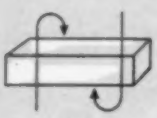
Constant mechanical improvement continues to make Boyd Press the logical choice for top profit dollar from high volume dry press brick production. Shown below are a few of the improvements which have been made to the Boyd Press in recent years. They combine to make *your* next press —*the best Boyd yet!*

BOYDAMATIC
Easily operated control system provides full automatic operation — or selective combination of manual and semi-automatic controls over various press operations.

STRONGER TOGGLES are of all steel rib construction. Load bearing surface increased 100%. All bronze or steel bearing surfaces are replaceable.

END GRAIN FORMICA used for frame wear plates. Is durable, smooth and easy to replace.

TOP 'N BOTTOM ACTION
Pressure is exerted upon both the top and bottom of brick in the mold — to reduce density variance to a minimum, insure better, more stable brick.

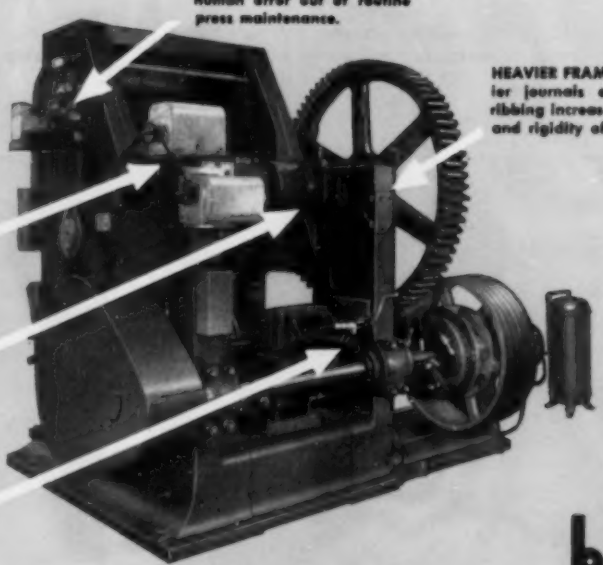


DE-AIRING PAUSE
Momentary pause in press operation allows air to escape before final compression stroke. You get dense, finely proportioned brick and reduce distortion in firing and use.

AIR OPERATED CLUTCH-BRAKE gives instant response to Boydamatic controls. Is positive and trouble-free.

NEW BEARINGS. High speed shafts are fitted with sealed roller bearings; low speed shafts with renewable plastic inserts.

AUTOMATIC FORCE-FEED LUBRICATION is positive, thorough. Takes element of human error out of routine press maintenance.



HEAVIER FRAMES. Heavier journals and more ribbing increase stability and rigidity of press.

"BRAINS" for the new flexibility of the Boyd Press is found in this sequencing rotary cam limit switch.

ALLOYING, heat treating and flame hardening make gears, crankshaft, side bars and crosshead tougher, longer wearing, smoother running.

AIR OPERATED CHARGER is completely flexible. Can be operated continuously with press cycle or controlled for single stroke by selector switch.

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NEWS OF REFRACTORIES

H-W Purchases Freeman Fire Brick

Charles A. Freeman, president of Freeman Fire Brick Co., Canon City, Col., has announced that Harbison-Walker Refractories Co., Pittsburgh, has acquired the Freeman company.

E. A. Garber, H-W president, has said that he plans to extend the Freeman operation in the near future. Local management will remain under the direction of Freeman, according to H-W.

Quarter Sales, Income Up At Basic, Inc.

H. P. Eells, president, has announced that third quarter net sales of Basic, Inc., Cleveland, amounted to $6.1 million and resulted in net income of $378,658. After preferred dividends of $16,530, this equalled 47¢ each on shares of common stock.

Corresponding figures for the same period 1956 were $5.03 million net sales and $247,661 of net income, with common dividend of 29¢.

Net sales in the first nine months of 1957 amount to $18.4 million, with net income of $1.2 million. This compares to 1956 nine month figures of $17.1 million in net sales, $1.07 million in net income.

H-W To Start Shipping From New Hammond Plant

Shipments of chemically bonded basic brick were to begin on October 21 from the new plant of Harbison-Walker Refractories Co., Hammond, Ind. Substantial inventories were available so that the company is in a position to take care of most requirements of these products, the announcement said.

The plant has been under construction since the summer of 1956. Within the next few months, burned brick, completing the H-W basic line of products, will be available.

$1 Million Expansion For Porter-Bessemer

Construction of a modern tunnel kiln refractories plant at Bessemer, Ala., is part of a one million dollar program, just announced by James P. Raugh, vice-president and general manager of the Refractories Div., H. K. Porter Co., Inc.

A general rehabilitation program at this plant, in addition to the new tunnel kiln and drier, will include new materials handling equipment and new brick making machinery.

Swindell-Dressler Corp. has been awarded the contract. The plant will be built according to Refractories Div. specifications. Ground-breaking will begin within 60 days, and completion is scheduled for the fall of 1958, at latest. The new units will utilize present clay grinding and batching facilities at Bessemer Works.

New brick-making machinery of the most modern type will have every modern device needed to produce burned refractory brick with the best physical properties and with closer dimensional tolerances than this plant has been able to obtain in the past.

W. M. Snow, superintendent of Bessemer Works, will be in charge of the expansion program. Mr. Snow has been with Porter's Laclede-Christy Works at Bessemer since 1942.

Earnings, Sales Up At General Refract.

General Refractories Co., Philadelphia, has reported net earnings for the first nine months of 1957 of $5.6 million, equal to $4.30 per share. This compares with 1956 figures of $4.9 million and $3.73. Sales were $53.1 million for the period, compared to last year's $49.0 million.

Lavino To Build $8 Million Plant

A plant, to cost nearly $8 million, will be built near Freeport, Tex., by E. J. Lavino & Co., Philadelphia, according to local news reports.

The plant will produce high-grade magnesite, according to an announcement by G. B. Gold, Lavino president. An option on 120 acres of land with harbor frontage has been made. Magnesia will be extracted from sea water and will be used along with Texas dolomite to produce high quality periclase, the announcement said.

The plant, expected to be in operation by mid-1959, will employ some 100 persons at the start.

Porter Sales Set Nine-Month Record

Sales of $116,760,360 for H. K. Porter Co., Pittsburgh, in the first nine months of this year have set a new record for the firm.

The company has announced that the figure surpassed 1956 comparable figures by almost $15 million. Sales in the third quarter amounted to $38.5 million, compared to a 1956 figure of $32.6.

New Boyd Press Installed at Columbiana

The new heavy duty Boyd press shown above was recently installed at the Columbiana, Ohio plant of Kaiser Chemicals Div., Kaiser Alum. & Chem. Corp. The equipment completes a three-press line at the Columbiana plant and raises capacity some 50%. Shown inspecting the set-up are C. A. Rick, left, plant production superintendent, and E. W. Adams, plant manager.

Engineers Wanted:

How To Recruit Technical Help You Need

Ways and means of finding the technical personnel needed in an increasingly complex industry; a review of what some other industries are doing; how to use the TRI aids.

One problem that's becoming increasingly important to management in the manufacturing industries today is recruitment of engineers and other skilled technical help.

Among the reasons for this urgent need for technical help are two factors: the increasing size of industry and the increasing complexity, plus the constant demand for better quality and closer control of manufacturing processes.

The day seems to be gone when a manufacturer can get along with no laboratory facilities, either in his plant or in his industry association. Better product and better control of manufacturing are demanded today, both by customers and by what the competing industries are doing.

How To Get Engineers

That leads then to a scramble among competing companies for what engineers are available, either as recent college graduates or those that can be lured away from their present employment.

One of the problems of the refractories industry, in recruiting college-trained engineers, is competition from other industries. A leading refractory plant must often compete with such people as General Electric, RCA Victor and others for engineers, whether purely ceramic or mechanical course graduates.

Another problem involved actually dates back to the high school (or earlier) days of the prospective employee. There's a wide demand for engineers in chemistry, electronics, mechanics, physics and many other fields aside from ceramics.

How To Get Ceramists

Therefore, in a sense the problem of recruiting goes back well beyond college graduation days. There's a great need to locate prospective ceramic engineering graduates and to encourage them to enter the field by any means possible: scholarships, personal contact and urging, persuasion of likely sons of refractory plant employees, etc.

For engineers-to-be that will be useful in aspects of refractory manufacture, there must be similar inducements to persuade these to work with the refractories industry after graduation. Our industry must make them ceramic-minded, as far before entering college as possible.

All of this, of course, involves long-range planning, and somewhat of a gamble.

What To Do Today

The pressing problem is recruiting today, next month and next year. Because this is such an important area of management today, we're going to cover some tips on recruiting; some reviews of what other industries are doing; and a review of what the refractories industry is doing in this field.

The most obvious place to find the technical men you need is the college, which almost goes without saying. But before college recruiting can begin, the refractories management people must really start in their own plant.

First, although this seems too obvious to mention, do you really need an engineer? If so, what kind is best for your particular operation? Where, when and how will you assign the man or men when they come. Will his duties be all-around or will they be one specific aspect of operation.

It may sound surprising, but some plants don't really need an engineer too critically, or perhaps can get by with the ones already employed if their work is better defined and made more efficient.

When the question of the urgency of the need for technical help has been decided, the next step should be the above points of deciding upon the real need for the engineer and defining what use will be made of him at your plant.

Then Start Looking

When you know exactly what you want in an engineer, you're ready to try to line up a really useful man. Next, where do you look? For a company with limited manpower and time, there's no use at all in trying to blanket all colleges. Pick out some colleges (preferably in your own area, if possible) with good departments that fit your needs.

Find out about the requirements of the college as far as recruiting is concerned. Most of these schools have placement departments on a large or small scale. Learn the requirements of these people as to interviews, appointments, times of the year when recruiting is encouraged or discouraged, etc.

Get to know some of the college faculty in the departments you're interested in ,and let them know what you want. Try to keep the college people up-to-date with your plant literature and anything else that'll keep them informed about your operation and its needs.

Summer Jobs A Help

Many college students want, or need, a summer job. This is a real opportunity to get them into your company. Advantages of this summer employment are a chance to sell the student on your plant, and give you a better chance at sizing the student up as a potential future worker. Many of the colleges have placement bureaus that'll help you find summer employees. The actual working value of the summer-time man may not be high, but the value may come in getting a good worker after graduation.

What Jobs Do They Want

Before doing actual interviewing of students, it's wise for the plant man to know how he wants to conduct the interview, and to have a good workable knowledge of what the students are likely to be looking for.

Working in a giant industry can be desired by some students, where the student has diversified opportunities. One disadvantage of the larger plant is a more-or-less specialized job.

Therefore, if you have a smaller plant, it might be well to point up the advantages of learning the over-all operation of your plant and the industry.

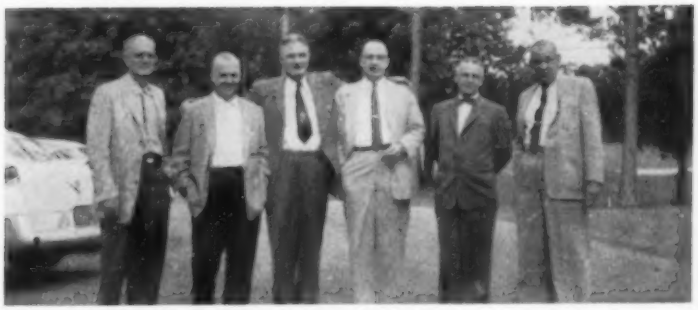
Pay is always a problem. Try to get a good idea of what the average pay is at graduation time. Try to stick fairly close to the average but to instead point up other inducements of your company. Starting salary is not always the most important thing in the prospective employee's mind.

More than salaries or plant size as a problem for refractories recruiters will be a lack of knowledge of our industry and of its employment requirements and aspects. Few students will want to join an industry they know nothing about.

It again sounds too obvious to mention, but try to pick one of your best men for the interviewing . . . the college student will judge your company by the man you send.

(Continued on page 86)

TRI Point Clear Meet elects West; hears career brochure report; plans product directory plus



Messrs. McFarlane, Brashares, Dixon, Terman, Davis and Cummings.

"Relation of A Company and A Community"

The Refractories Institute held a well-attended fall meeting at the Grand Hotel, Point Clear, Alabama on October 3 and 4. The sessions were conducted by J. E. Brinckerhoff (The Babcock & Wilcox Co.), president. Other officers are F. H. Laube (Freeport Brick Co.), treasurer; Avery C. Newton, executive secretary; and W. J. Kenney, attorney.

Among some of the decisions that were made by the Board of Directors and announced at the meeting were:

The election of Howard West of the Illinois Clay Products Co., Joliet, Illinois, as a Director, in the place of S. R. Gurley, who resigned.

Promotion of The Institute's Award Contest for the best paper on refractories was referred to the Factory Operators Committee with the suggestion that the presentation of prize winning papers be made a part of the Annual Factory Operators Meetings.

The Institute is keeping in close touch with the organization and development of the Metallurgy-Ceramics Foundation being formed to encourage more and better qualified students in the fields of metallurgy and ceramics. One of the projects of this foundation is to offer scholarships on a national basis. The sponsors of the foundation are: The American Society for Metals, The American Institute of Mining, The American Ceramic Society, Metallurgical and Petroleum Engineers and The National Science Teachers' Association.

Career Brochures

Career brochures which had been prepared by the Institute have been sent out to each company, and in addition 800 copies have been mailed out to engineering schools and high school counsellors wherever names had been given for distribution. The Institute feels that the wide distribution of this brochure will help encourage students to become interested in the refractories industry. A program to interest students at Ohio State University in refractories will be held in Columbus on Nov. 21-22.

The last Product Directory of the Industry was published in 1954. A new one is planned for publication in January, 1958, and all manufacturers are urged to reply to questionnaires that have been sent to them so that the Directory can be made complete.

Lindsay Named Chairman

Bulletins of the Iron and Steel Institute on supplementary unemployment benefits are available to members through the TRI headquarters. Carey Lindsay of the Niles Fire Brick Div., Mexico Refractories Co., has been named chairman of the Factory Operators Meeting to be held next March 6-7 at Pittsburgh.

The Spring meeting of TRI will be held May 8 and 9 at The Homestead, Hot Springs, Virginia.

A very inspirational talk, acclaimed by his entire audience at the meeting, was given by Herbert B. Plunkett, Vice President of the A. P. Green Fire Brick Co., Mexico, Missouri. The title of the talk was "Relation of a Company To Its Community."

Plunkett told of the human value approach to the subject of the relation of a company to its community and analyzed the time spent by the average man who works in his plant. He stated that out of 168 hours in a week, 40 hours are employed in work, 56 hours in sleep, and 72 hours—the largest portion of his time—is free.

So, Plunkett said, we became interested in what our employee does after he leaves the job. Our companies are a part of a community, whether we want to be or not, and there were two questions that Plunkett said were important confronting any company: 1) Is management willing to put in time in the interest of its employees off-hours; and 2) is management willing to assist the backing of a program and support it with personal resources in an indirect manner.

Plunkett then went on and told what had happened at Mexico in the last 10 years, and the importance of the support of the two brick plants—A. P. Green Fire Brick Co. and Mexico Refractories Co., who employ 65% of all the workers in the town. He again emphasized the importance of the willingness of a company to delegate a top executive to work all of the time that is needed in a project of this kind.

Paraphrasing a remark made by Ex-Secretary of Defense Wilson, "What's good for a brick plant is good for its community, and vice versa."

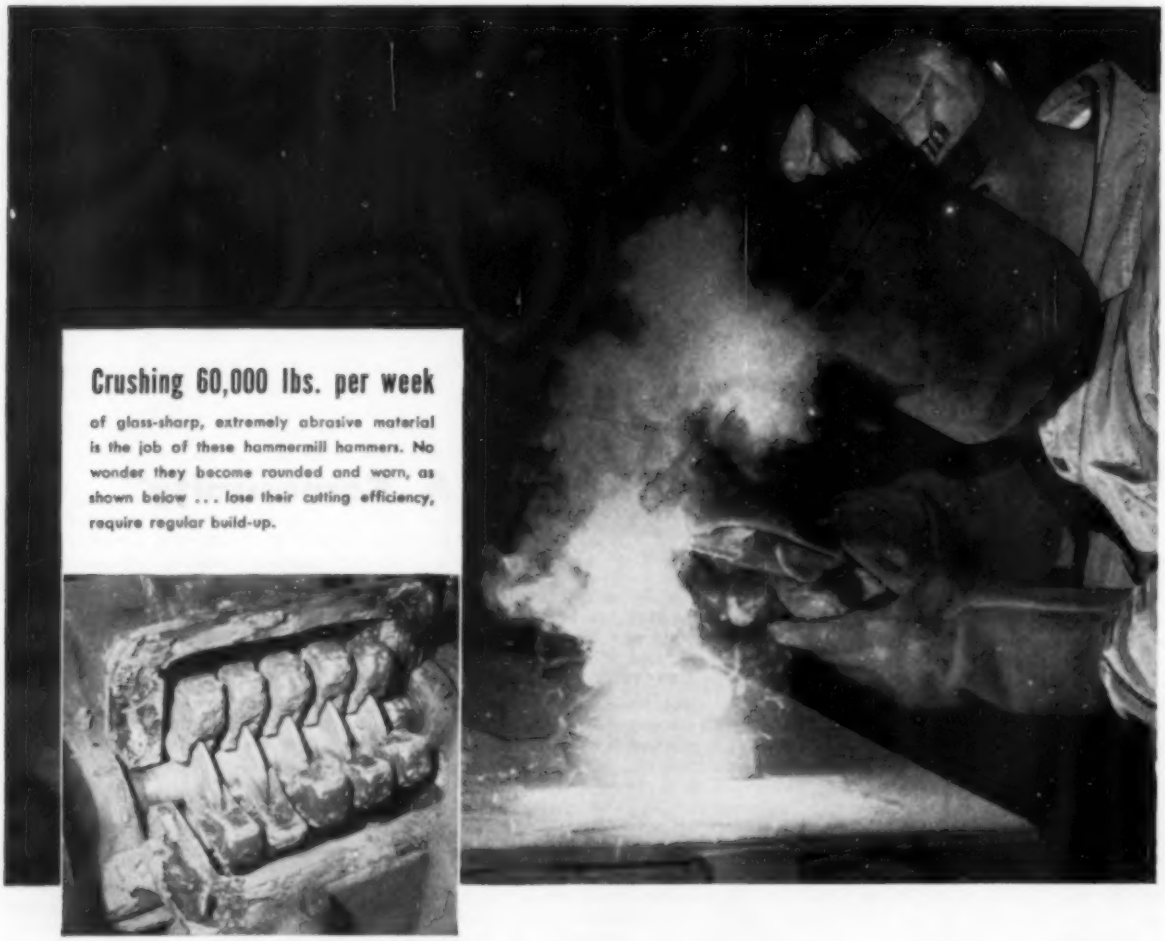
At all times, he said, it was never the policy to dominate or dictate what the community should do. What they

(Continued on page 67)

Knauft Report, Bedford Springs Meet

Because of the combined timeliness of the stories on the Point Clear meeting and the TRI Ohio meeting and the lack of space available, we are forced to hold back two stories that were scheduled for this month.

The concluding part of Robert Knauft's report on his European tour, and the story of the ACS Refractories Div. meeting at Bedford Springs will appear next month.



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of glass-sharp, extremely abrasive material is the job of these hammermill hammers. No wonder they become rounded and worn, as shown below . . . lose their cutting efficiency, require regular build-up.

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doubles service life . . . cuts electrode costs

Welding Flux Processing, Chicago Heights, Illinois, know a good thing when they see one. That's why they've switched *exclusively* to Amsco Super HF-20 Electrodes for hardfacing of these hammers. They're saving three ways:

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2. Super HF-20 electrodes cost about 40% less than the type previously used.
3. Welding speed is stepped up. Super HF-20, an iron powder "contact" electrode, is easy to handle and gives a high deposition rate.

In this and many other severely abrasive applications, Amsco Super HF-20 has *proved* its ability to provide superior wear resistance at low cost. Available from stock in 3/16" diameter, to handle hardfacing jobs of almost any size.

Call your nearby Amsco Welding Distributor now for a demonstration of Super HF-20. Or write direct for technical data to: Amsco Welding Department, Chicago Heights, Ill.

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TRI Continued

tried to do was to motivate individuals in the community to move. There were no recreational conveniences in Mexico, Mo., 9 years ago. The then-young mayor of the town came to industry with a plea that something be done on the subject. Five important men of the community agreed to serve on a committee.

These included: J. B. Arthur, President, Mexico Refractories Co.; the president of the Mexico Military Academy located in Mexico; the superintendent of a local shoe factory; a prominent young merchant in the city; and Herbert B. Plunkett, Vice President, A. P. Green Fire Brick Co.

These five invited two ladies to join: one, a young mother who had a lawyer's degree; and the other a more elderly lady who was prominent in church circles and in the League of Women Voters.

Thus, in 1949 was formed the Mexico Recreation Board with this group, who still serve the community. There was no guide to use so the committee created its own program, which has since become famous.

Through this committee, the citizens of Mexico have developed facilities that include children's playgrounds, tennis courts, baseball fields, a swimming pool, a golf course, an amphitheatre for outdoor entertainment, two fishing lakes, and places where you can sit around and talk to friends. All together, 207 acres of land were purchased and developed.

Additional facilities include a Girl Scout cabin, a Boy Scout cabin, and land donated to the state for a National Guard Armory. Through the local newspaper the Committee brought the public in to assist in doing the work, and enlisted the support of civic groups, women's clubs, church leaders, teachers, city and county officials.

As a result, just about everybody offered material and labor to bring recreation to Mexico. It was a most interesting demonstration of community cooperation that has developed into one of the outstanding community programs in America.

Community Cooperation

Men of the Kiwanis group, for instance, dammed up a small stream in the recreation area to form a two-acre lake which has been stocked with fish. Rotarians donated a drinking fountain and equipment for tennis, softball and basketball. Lions Club members built picnic tables from lumber given by local dealers. The women's organizations and the PTA joined in providing the children's playground equipment.

Even the prisoners in the city jail worked out part of their time clearing brush and shaping up the roadways of the area. The local businessmen's fraternity raised the money to build the bandshell, where the St. Louis Municipal Opera put on the opening show.

Gradually, as the program developed, there was a recognition by the community that the local industry was interested, and there became the recognition on the part of management that recreation is a natural obligation of a community.

To give the program expert supervision, the committee employed the athletic coach at the local military academy as recreation director. With the help of 20 assistants, many of whom are low-salaried teachers who earn extra funds during the summer recreation program, they have been able to organize 3,000 Mexico children in play.

For instance, 375 boys play baseball in the morning, and swim in the afternoon.

The major result of Mexico's program, says Plunkett, has been to make Mexico a place where workmen and their families enjoy having their homes.

J. C. Penney has since founded an organization known as the National Council of Community Development. Companies like General Electric and the Ford Motor Co. have appointed top men who are serving on this committee, the purpose of which is to develop a blueprint and plan for other communities to follow. Plunkett is on this committee, which has absorbed many of the ideas of the Mexico program as a basis for their community plan.

Because of the fact that so many brick plants are in small communities and frequently a substantial employer of the available labor force in those communities, this talk of Plunkett's has a great deal of interest to this industry.

Golfers include Frank Christenson, A. R. Barnett, C. V. Campbell and E. C. Tinsley.

Also there were these golfers: Shepard, Laube, Reid, and Barrett at the Point Clear meeting.

Golfers Johnston, Wildner, Taylor and Knauft

More golfers were Rhodes, Brinckerhoff, Plunkett, and Thorpe

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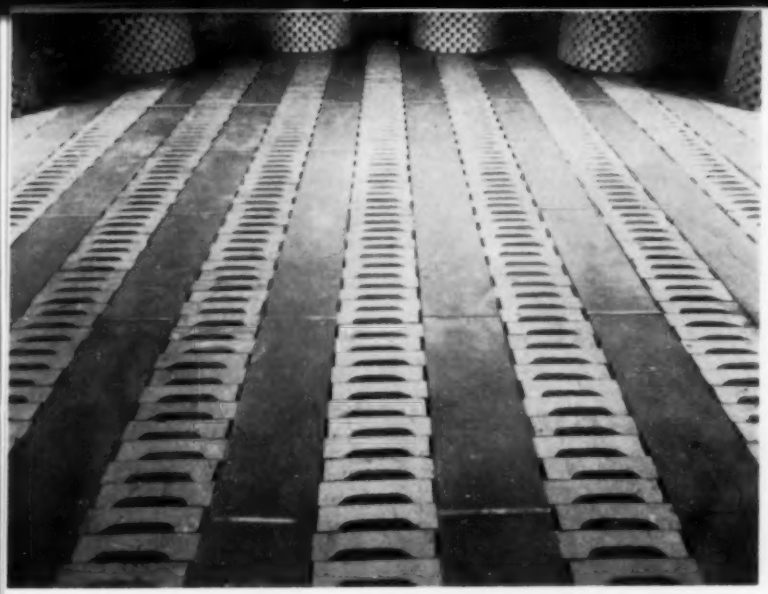
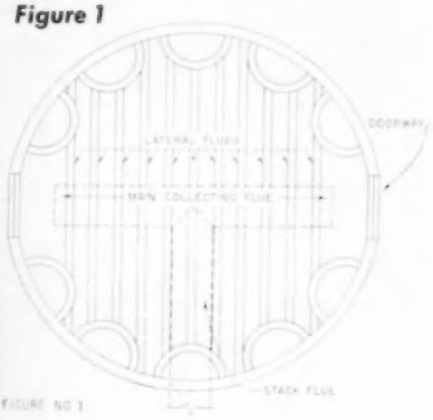


Figure 4

Figure 1



Complete Kiln Substructure Built of Refractory Concrete

Charleston Clay Products kiln features lower labor cost, long life.

A complete round-kiln flue system and floor substructure have been constructed of a cast refractory concrete mix. An inspection, following 14 months of regular operation, indicates that this new construction material will serve a long, useful and economical life.

The information in this article is concerned with the work in the #3 kiln of the Charleston (West Virginia) Clay Products Company. The kiln is used for firing face brick at a maximum crown temperature of 2160°F.

Construction Features

A summary of the construction features and an evaluation of service results indicate that flue walls made with refractory concrete offer the following major advantages:

1. More nearly volume-stable walls are produced. There is no evidence of bowing, bending, or major displacement of the base members.

2. There is a substantial reduction in crack or joint area which greatly reduces the amount of displacement in the superstructure as a result of pressure from expanding setting-sand and broken ware.

3. Concrete construction methods and procedures permit the use of mechanical equipment for economically preparing, transporting, and placing the refractory material.

4. Labor costs are lowered because the volume of refractory concrete material placed per man-hour of labor can greatly exceed the volume placed in an equal time when small refractory units are used.

5. Re-usable forms may be constructed to result in low over-all costs for the necessary concrete forms.

By
N. M. Thompson
LUMNITE Field Engineer
Universal Atlas Cement Co.
and
R. A. Saunders
Maintenance Engineer
Charleston Clay Products Co.
Charleston, West Virginia

Kiln Operation

The gas fired, round, downdraft periodic kilns in the Charleston plant are 32′ in diameter and are used to fire high-quality face brick, facing tile, and packing house type floor brick. A normal firing cycle lasts approximately 6 days with maximum crown temperatures ranging up to 2160°F.

The major features of the "Tee" flue layout are shown in figure #1. The main flue, 30″ wide, extends across the center of the kiln approximately from door to door. Small lateral flues are placed at right angles to the main flue. The gases in the main collecting flue are exhausted through a stack flue, which runs at right angles to the main flue and which is placed under some of the lateral flues. A large portion of the kiln setting surface consists of the tops of these walls.

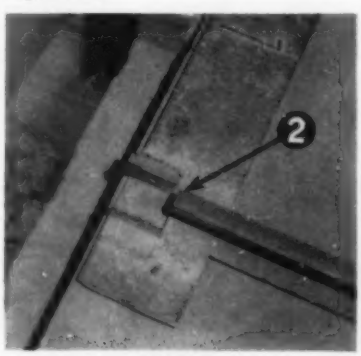
Lateral Flue Walls

The cross section sketch shown in figure #2 indicates the size and construction of the lateral flue walls. It will be noted that a horizontal construction joint is provided at a level 12½″ below the top surface. This, in effect, gives a base wall with working cap sections. These construction joints or planes of weakness are made with the thought that they will facilitate repair work that may be needed in the future. Wear on the top surface or failure of the ledges supporting the riddle brick will eventually make replacement of the wall caps necessary.

Flue Wall Forms

The photo shown in figure #3 clearly shows flue walls after some of the concrete has been cast and the forms have been stripped. It also shows forms ready to receive the concrete to make the next flue. The arrow (1) points to some of the formwork in the main collecting flue. Vertical expan-

Figure 6



sion joints were formed, in the caps only, by embedding ¾" thick boards in the concrete. These boards were placed on 48" centers and were burned out. Vertical construction joints, not expansion joints, were placed on 48" centers on the base section of the lateral flue walls. These were placed midway between the expansion joints in the cap section.

Finished Floor

The photograph reproduced in figure #4 was taken to show the completed floor surface. A surface which is even, smooth, and level facilitates the setting of the ware and reduces the amount of distorted ware produced.

Service Results

The fired brick are placed on pallets and the pallets are removed by pneumatic-tired lift trucks. The truck wheels run on the floor surface and no cover plates are used.

The photograph shown in figure #5 was taken from the same camera angle as the one in figure #3. This photo shows the floor surface after 6 months of regular service. In that time, the kiln had been fired through thirteen cycles.

Some riddle brick were lifted to obtain a detailed photograph of the refractory concrete under the floor surface, as shown in figure #6. A part of the wall in the main collecting flue may be seen in this view. The arrows, (2) and (2), in figures #5 and #6, point to the same rail end.

Concrete Costs

The mix used for this refractory concrete consisted of Atlas Lumnite Cement, fine fire clay grog and coarse fire clay grog. The fine grog was purchased and sized from ⅛" to fine, a gradation comparable to the grain sizing of sand used for normal concrete work. The coarse grog was graded from 1½" maximum to fines, and was prepared by crushing salvaged fire clay brick. The mix ratio was 1:3:4 of cement:fine:coarse grogs by volume. A small job-site concrete mixer was used.

Careful cost estimates were made. The charges against the concrete work included all the labor and materials involved in preparing and transporting the materials, the construction of the forms and the mixing and placing of the concrete.

These changes were about 60 per cent of those estimated for a similar amount of refractory construction using conventional materials and procedures.

Extent of Use

In the five round periodic kilns in the plant, refractory concrete has been used for lateral flue walls as follows:

Kiln #1—approximately 10 per cent of floor area, placed January 1956.

Figure 2

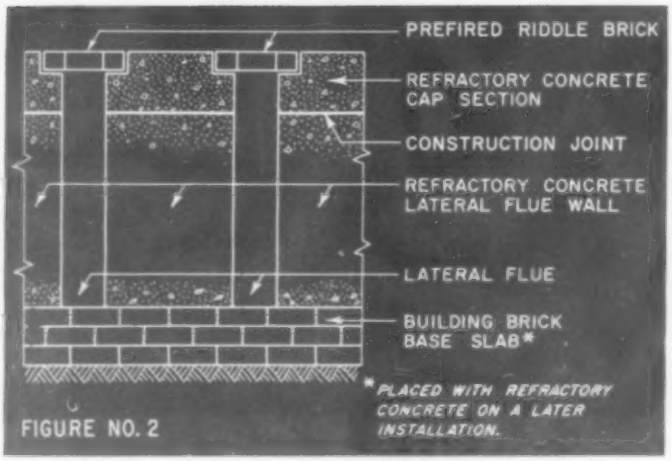

PREFIRED RIDDLE BRICK
REFRACTORY CONCRETE CAP SECTION
CONSTRUCTION JOINT
REFRACTORY CONCRETE LATERAL FLUE WALL
LATERAL FLUE
BUILDING BRICK BASE SLAB*
* PLACED WITH REFRACTORY CONCRETE ON A LATER INSTALLATION.
FIGURE NO. 2

Figure 3

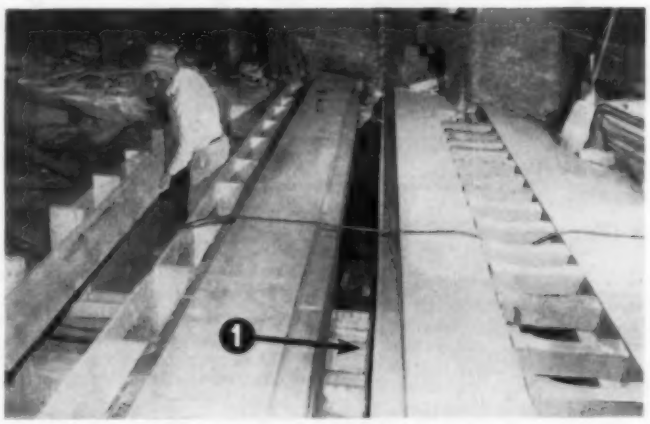


Photo above shows flue walls after some of concrete has been cast, forms stripped. Arrow points to some of formwork in main collecting flue.

Kiln #4—approximately 70 per cent floor area, placed February 1956

Kiln #3—100 per cent of floor area, placed March 1956.

On kiln #5, refractory concrete has been used for the base slab, under the flue walls (see note in figure #2), to cover the entire ground area of the kiln. At the time of this writing, forms have been placed to cast the entire flue and floor structure, as was done in kiln #3.

Conclusions

In the #3 kiln, through 14 months of operation, only 8 to 10 man-days of labor have been needed for operating maintenance to clean sand from the flues and to re-set riddle brick. The straight, plumb, smooth walls of the flues facilitated the operation of the sand removal.

The relative freedom from cracks and joints has reduced the amount of action from expanding setting-sand and has resulted in greater stability

(Continued on page 77)

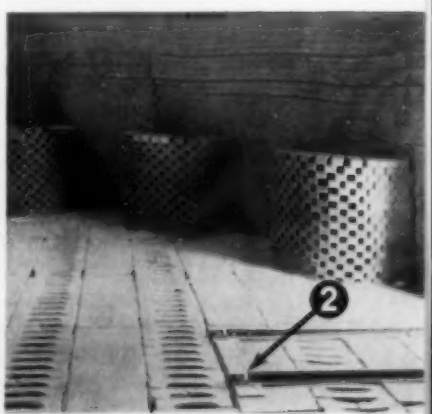
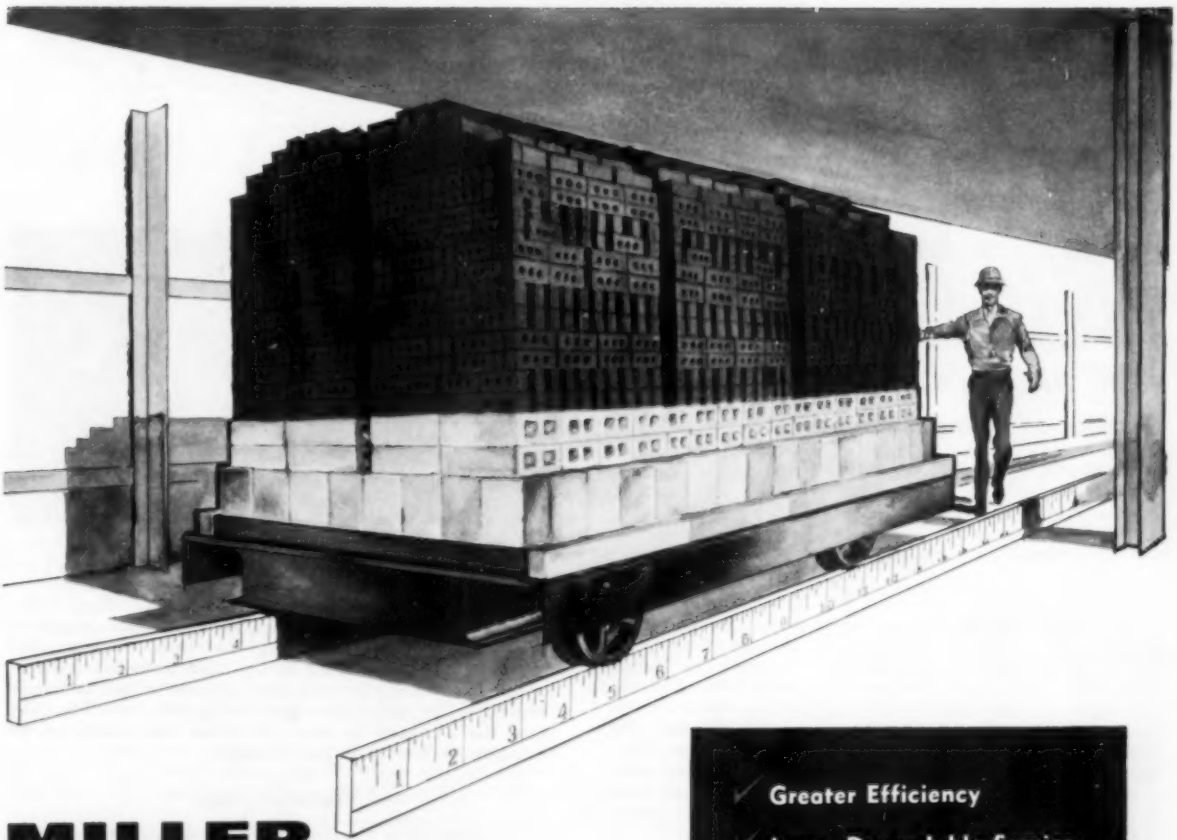


Figure 5



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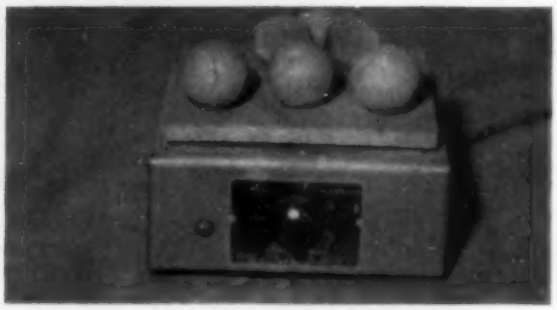
Procedure In Making Drying Ball Test

Pacific Clay uses testing method to check on drying characteristics of various clays to be used.



Drying balls on Temco electric hot plate.

The drying ball test is a standard control procedure used to check periodically the drying characteristics of the sewer pipe production mix at Pacific Clay Products, Los Nietos, Calif. This test is also performed on every new clay considered, at the time regular test bars are made to determine the various characteristics of water of plasticity, dry shrinkage, dry modulus of rupture, fired shrinkage, fired modulus of rupture, absorption, ignition loss and fired color.

Any proposed new body mix or alteration in body mix, in addition to the above standard tests, will have a drying ball test performed and results noted. This is done as the material is extruded from the laboratory test machine.

Stockpile Tests

It is also standard procedure to make drying balls and test bars on each stockpile of clay, which consists of about 20,000 tons. Six holes are drilled vertically into the pile to a depth of 12 to 14 feet. Each complete hole sample is made into body by introducing the water of plasticicity into the dry pan, the clay mix is then extruded from an extruding machine, forming bars, and a clay ball is formed from this for performing the drying ball test. The data from the six holes is then correlated and compared for variation of the clay in the stockpile.

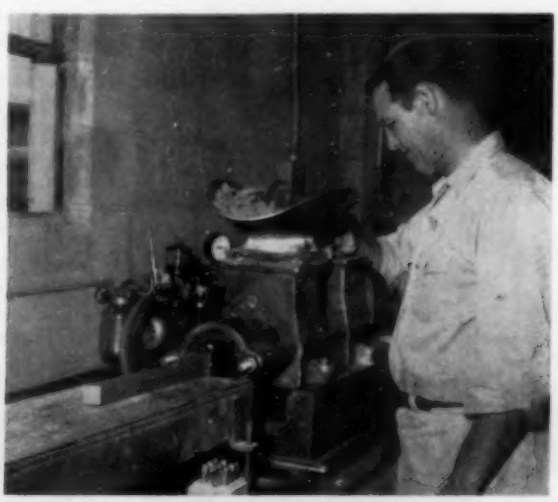
Typical Test Run

The following is a typical test run on a new body mix:

The several clays forming the body mix are weighed and added to the laboratory dry pan. The necessary water of plasticity is added. When this mix has been properly processed, it is transferred to the laboratory deairing, pugging and extruding machine.

Test bars are extruded, about 1 in. sq., and cut to the desired length. After the first several bars have been cut

Ball shows external dry crack five minutes after being placed on electric hot plate—a poor dryer.



Lab Technician Gene Webb is extruding clay bars.

a 2" section of the clay bar is cut and pressed into a ball about 1¼ to 1½" in diameter. The ball is not rolled but pressed together so as not to introduce laminations in the outer surface of the ball. This ball is then placed lightly on an electric hot plate so as to have a minimum point of contact between the ball and the hot plate surface. At Pacific Clay a "Temco" hot plate is used. This is a standard Temco hot plate, 110 volts, and the rheostat is set at position 3.5 which produces approximately 410° F. at the surface of metal plate of the unit.

Ball Completely Dried

The ball is left on the hot plate until it is completely dry. However, after about 10 minutes' time on the hot plate, the ball will begin to show cracks if the clay or clay mixture is a poor dryer. The ball from a new body mix being tested showed several large cracks developing after 5 minutes' time on the hot plate. This body mix would be classified as a poor dryer and would probably cause trouble in production due to cracking losses. Through past experience and performance in making these ball drying tests, one ball of each mix or clay tested is sufficient to evaluate the drying characteristics of the body mix or clay tested.

The following are the different classifications used in noting the drying characteristics of a clay mix or clay:

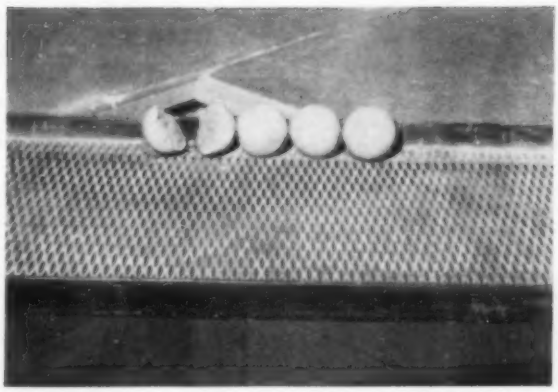
Excellent Dryer—A ball that has no visible cracks on the exterior of the ball or at the point of contact of ball and the hot plate.

Good Dryer—A ball that has no visible cracks on the exterior of the ball but a few minute hairline cracks at the point of contact of the ball and the hot plate.

Poor Dryer—A ball that has one or more cracks on the exterior surface of the ball and hairline cracks at the point of contact of the ball and hot plate.

Very Poor Dryer—The drying ball upon drying will fall apart.

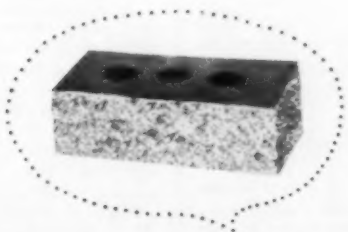
With relation to a complete production body mix consisting of two or more clays, then the above last two classifications as a "Poor Dryer" and a "Very Poor Dryer" would not be considered for a body mix to be used in production since this type of body would give heavy drying losses. However, a single clay falling into either the category of a Poor Dryer or a Very Poor Dryer could be used in small percentages of a body mix wherein the complete body mix fell into the classification of either an "Excellent Dryer" or a "Good Dryer."



Balls showing classification of, from left, very poor, poor dryer, good dryer and excellent dryer.

It is recommended that drying balls be formed only at the time a clay or body mix is being processed through a laboratory pugging, de-airing and extruding machine, not merely by taking some clay and forming a plastic mix by hand and then forming a ball. A drying ball can also be made from the body mix coming from a production extruding machine.

This testing procedure becomes more and more important as drying schedules are shortened and drying conditions become more severe.



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zinc-free glaze since zinc will give chrome a dirty olive drab coloration. Second, chrome is quite refractory and a base glaze formula often must be completely reworked to carry a 4% or 5% addition of chrome green.

Another thing, chrome oxide has some tendency to fume at the higher temperatures and it is desired to eliminate a straight chrome oxide addition in favor of a high chrome blue green where the chrome is tied up with cobalt in a spinel formation. From a coloring standpoint, chrome oxide fuming can spell disaster if there are some tin bearing stains in the kiln at the same time. Chrome oxide and tin oxide have quite an affinity for each other and will combine to form a chrome tin pink.

Most plants, at one time or another, probably have found their tin grays coming out pink and their tin vanadium yellows coming out brown and this probably has been the action of some chrome contamination in the kiln atmosphere.

I might point out that chrome tin pinks are destroyed by the presence of zinc oxide or magnesium compounds and one way to inhibit the chrome flashing is to run all tin bearing stains in a zinc base glaze or a glaze containing 4% or 5% of talc.

Word of Caution

Cobalt alumina and cobalt alumina zinc blues are uniformly dependable in almost any type glaze. One word of caution would be to use weak stains for making the lighter blue shades, since strong stains may show a specking tendency when cut back to small percentage additions.

Quite often, when a company decides to begin a glazing operation, they endeavor to use one base glaze for the majority of their colors and some of them do admirably well in carrying out their intentions. It is quite possible to set up one zinc glaze and run a nearly complete palette of colors in the one glaze. However, after running these glazes in production for awhile, they find out things about the glazes that can be improved somewhat.

Sometimes a chrome alumina pink makes the glaze slip too fluffy and one must find ways of reducing the glaze viscosity without changing specific gravity.

Perhaps a dark blue green is being run at an inordinately high mill addition to gain color strength, when the same color could be achieved more cheaply by reducing both the opacifier and the stain additions.

Perhaps there is a color stability problem and the color supplier has recommended a glaze change.

No One Glaze Best

Any number of things can crop up which will point the way to some sort of glaze change. There is no such thing as one glaze which is best for all colors, any more than one glaze is suited to all clay bodies or is suited to all conditions of application. A glaze must satisfy a number of requirements which include surface qualities, opacity or hiding power, "fit" to the body, slip working qualities, and color.

Too often a glaze will be formulated to satisfy only one or two of these requirements when it should be a compromise to satisfy all of them as well as possible. Therefore, we suggest that you be open-minded about glaze formulation and do not restrict yourselves to one glaze which you have arbitrarily chosen as being best.

Applying Glaze

In most glazing processes, the glaze is applied either to dried ware or to green ware immediately after it leaves the cutting machine. There are problems involved in each method, but, in general, a higher quality product can be obtained by glazing the dried ware.

Some brick manufacturers make a specialty line of brightly colored glazed brick where the glaze is applied to fired brick, but this is a special

(Continued on next page)

Statement of the Ownership, Management, and Circulation Required by the Act of Congress of August 24, 1912, as Amended by the Acts of March 3 and July 2, 1946 (Title 39, United States Code, Section 233)

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Sworn to and subscribed before me this 20th day of September, 1957.

Floyd M. Burdick, Business Manager

Karl H. Clarke, Notary Public

[Seal]

(My commission expires October 21, 1960)

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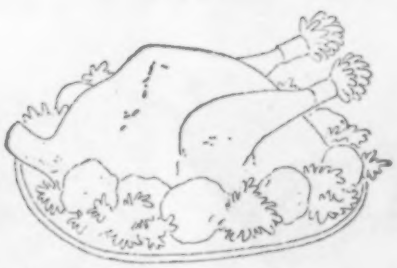

if competition is getting business you want . . . just see page 28

application and will be discussed briefly later.

Unless a new plant is to be designed and built to accommodate a glazing process, the existing conditions in a plant will pretty well determine whether the glaze must be applied to green brick or to dried brick. From a cost standpoint, the installation of the glazing machine in line with the cutting machine and drier car setting station is very desirable since it eliminates extra handling.

Drying Can Be Problem

However, drying of the applied glaze prior to handling can be a very serious problem and involves the heating of the glazed surface and a time lapse sufficient to remove the water gloss from the glazed surface. The time lapse, of course, must be translated into so many feet of conveyor between glaze machine and setting station and most plants do not have anywhere near the amount of space required.

On the other hand, the ware cannot be heated any hotter than the hackers can comfortably handle, and you certainly cannot do anything that will cause them to be careless in the handling of a freshly glazed brick.

To Dried Ware

Of course, there are many other factors which will help determine which glazing method will be used, but most existing plants wind up applying the glaze to dried ware. A number of problems are eliminated by this method and it essentially involves the installation of the glaze machine in a spot convenient to the kiln and the transport of the warm dry ware to and from the glaze machine.

Firing of the glaze can be a weak spot in an otherwise well designed glazing operation. Fairly close control of temperature and atmosphere is essential to the maintenance of uniformity of glaze surface and fired color. Most glazed brick and tile firing is done in tunnel kilns for reasons of better control. Gas is the preferred fuel when it is available since it is most free of contaminating combustion products and is comparatively easy to regulate.

Color development in glazes is generally dependent upon some reaction with the glaze. Differences in firing temperature will cause differences in the amount of reaction of a stain with the glaze and may have some rather noticeable effects on the colors. Some examples:

(1) Chrome alumina pinks are soluble in glazes which are too fluid and attack the pigment too vigorously. The stain will give a clean pink color in a fairly stiff glaze but a fluid, high lead glaze or any fluid overfired glaze may completely dissolve the pigment and leave a characteristic weak brownish green color.

(Continued on next page)

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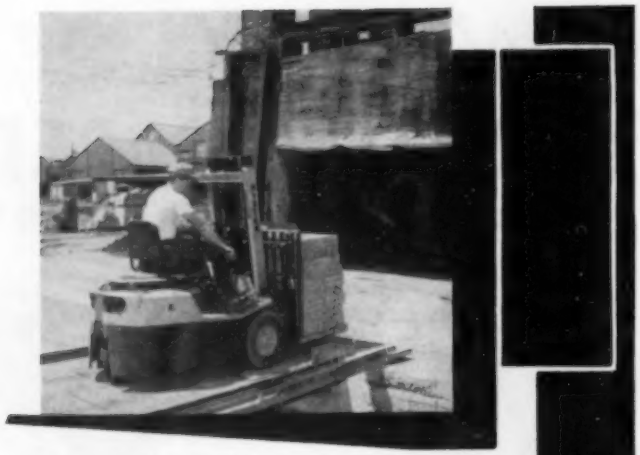

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Hyster 20 sets kiln faster because of high maneuverability.

CRAWFORDSVILLE, INDIANA. The Hydraulic Press Brick Company plant here has used Hyster lift trucks exclusively for about ten years, and currently operates six 2,000 lb. capacity units, equipped with Bickerstaff forks.

Kiln floors and yard terrain are rough, bumpy and sometimes muddy, but prove no obstacle to these highly stable, pneumatic-tired trucks.

One truck does all the setting (60,000 bricks per day) and completes a kiln every two and one-third days. Kilns are drawn at a rate of 30,000 bricks per truck per day. As kilns are drawn, cubes are loaded in cars or on trucks, or placed in future delivery shed.

See for yourself how a Hyster lift truck can speed up your operation. Ask your Hyster dealer for a demonstration today.

HYSTER®

Factories: Danville, Illinois; Portland, Oregon; Peoria, Illinois; Nijmegen, The Netherlands; Sao Paulo, Brazil; Glasgow, Scotland; Sydney, Australia (Licensee)

CARNAHAN, Continued

(2) Mixes of tin vanadium yellow and zircon vanadium blue will give pleasing pastel greens in properly fired glazes. Underfiring often develops only a medium blue color and overfiring may bring out something of a chartreuse color.

(3) Cobalt chrome blue greens may show a differential solution of the cobalt and chrome. An overfired glaze may dissolve an excessive amount of cobalt and show too much blue cast, and an underfired glaze may show too much green color.

(4) Chrome iron zinc tan stains are quite unstable when overfired and may bleach out entirely.

(5) Zirconium silicate grays modified with cobalt and nickel sometimes show rather erratic color in some of the high zinc, high feldspar glazes used in this industry. This often is a problem involving improper selection of stain and is best cured by changing to a different type of stain. However, improper firing and sometimes sloppy spray control will aggravate the condition. The condition can be recognized as a bright blue edging or sometimes an overall bright blueness.

In addition to color changes in the glaze, there are also color changes in the body. In pastel glazes, the glaze is seldom so opaque as to completely mask the color of the body and increased grayness in an overfired body will be reflected in an increased grayness in the glaze.

Effect of Kiln Atmosphere

Kiln atmosphere also has a profound effect on color. All colors should be fired in an oxidizing atmosphere. Most colors will be at least partially altered in a reducing atmosphere and some will be completely bleached out. Of course, you should not attempt to fire colors in a kiln which is to be flashed.

I might point out that any coloring process using ceramic pigments is almost certainly doomed for failure if firing is to be done in a coal fired kiln. Just about all of the coal fired kilns I have seen show a short period of reduction each time the fire box is stoked and this small amount of reduction, continually repeated, is usually enough to destroy the color. Also, the fly ash blowing around loose in a kiln like this can ruin what is intended to be a smooth glaze surface.

Type of Kiln

Type of kiln and type of clay often determines whether glazing may be done successfully. One very important consideration is the thermal expansion of the clay and the development of a glaze which will fit the clay closely enough to prevent glaze crazing or

(Continued on page 79)

Koehring Announces "Buy-Back" Plan

A buy-back plan, intended to increase the availability of bank credit for contractors and other customers, has been announced by Julien R. Steelman, president of Koehring Co., Milwaukee.

Under the plan, Koehring will underwrite credit arrangements negotiated between the equipment buyer and his bank.

A descending scale of values has been set up at which Koehring will repurchase the equipment if the buyer defaults in his payments to the bank, Steelman said.

Berkshire Takes Over Vitro Sales Activities

Berkshire Chemicals, Inc., of New York will take over all the sales activities of Vitro Mfg. Co., Pittsburgh, effective Nov. 1, according to an announcement by Joseph Boyce, Vitro general manager.

Berkshire, a wholly-owned Vitro subsidiary, will maintain the same sales staff which has served the Vitro Mfg. Div. of Vitro Corp. of America, parent company.

Two new Berkshire sales offices have been established in Pittsburgh and in Compton, Calif.

In order to meet increasing requirements of industrial lift truck users in Michigan, Yale Materials Handling Div., **The Yale & Towne Mfg. Co.**, Philadelphia, Pa., has established a sales and service sub-branch in Grand Rapids, Mich., to serve the western part of the state.

Promotion of A. L. Dassler from assistant chief engineer to chief engineer of **Koehring Div.**, Milwaukee, Wisc., been announced by E. A. Brugger, Division President.

Richard F. Steel was appointed Assistant General Manager of the **United States Borax & Chemical Corp.**, Los Angeles, Calif.

J. Raymond Schroll, president of **The Manufacturers Equipment Co.**, Dayton, Ohio, died recently of a sudden illness. Schroll has been the company's president for the last 13 years.

Three new assignments were announced by **Dodge Mfg. Corp.**, Mishawaka, Ind. Carl K. Shank, works manager; Edwin Rhodes, purchasing agent; and Richard Kaiser, plant engineer.

At a meeting of the Board of Directors of **The Timken Roller Bearing Co.**, Canton, Ohio, Dwight A. Bessmer was elected Vice-President of the company.

CHARLESTON KILN, Continued

in the flue walls and in lessened stresses in the entire kiln structure.

The even, level kiln floor had reduced the amount of distorted ware in the lower courses of the setting.

There has been no collapse of flue walls to reduce draft efficiency.

As compared to conventional construction, the lower first cost and the lower operating maintenance cost of concrete are very attractive.

Some cracking or spalling of the riddle brick support ledges may be seen on a few caps after 14 months of operation. Also cracks in the wall cap sections have occurred parallel to and midway between the ¾" expansion joints. These distress signs indicate an eventual need for the replacement of the wall caps. The operators express the thought that such replacement will not be needed for at least another 1½ years.

The over-all picture, costs, service life and operating advantages are such that it appears that refractory concrete will serve a useful and economical life in this class of operation.

let's hard face it!

Nobody can give you the answer to your particular wear problems without first knowing all the facts. Everybody's hardfacing problem is different.

But, *we* can tell you how to get longer life from your machinery . . . at lower cost, if you'll call us.

You'll find our district sales offices listed under Welding Equipment in the yellow pages of your phone book.

THE LINCOLN ELECTRIC COMPANY

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The World's Largest Manufacturer of Arc Welding Equipment and makers of the finest hardsurfacing electrodes

ROBINSON FAN EQUIPMENT

solved our enlargement problems for economical production of first class brick.

Robinson type "J" Fan on a Recirculating System for a Kiln

That's a statement frequently heard when brick plant operators are discussing their air handling problems.

Those economies are built on the foundation of a thorough study of the air requirements and the selection of fan equipment accurately engineered to meet the demands of the work to be done.

Robinson Engineers have the special training and broad practical experience to solve your most exacting air application problems.

Why not send us a description of your problem and the results you wish to secure.

SEE OUR CATALOG IN Ceramic data book Page 277

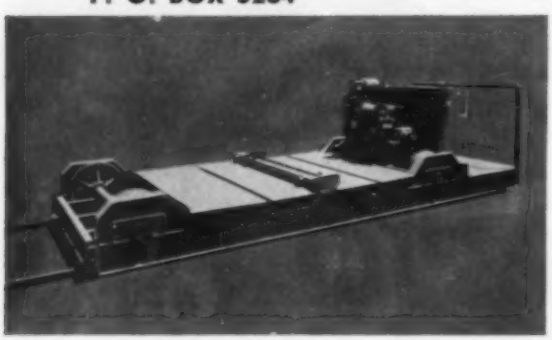
STRENGTH AND QUALITY

ROBINSON VENTILATING CO.

ZELIENOPLE, PA.

ENGINEERING ASSOCIATES, INC.

P. O. BOX 5284 **ASHEVILLE, NORTH CAROLINA**



The Hydraulic Transfer Car is the only car on the market with a truly variable speed. Starts and stops are smooth regardless of operator or severe service. Hydraulic drive allows use of such auxiliary equipment as pusher cylinder on car to pull on and push off kiln cars, and even charge dryers. Sliding position locks not required because of hydraulic lock when car is stopped.

Represented By: **Forrest A. Paschal**
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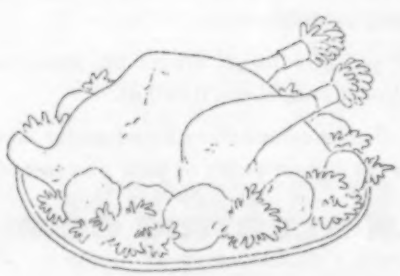


if too many of your new business leads are turning out to be "turkeys"... see page 28

shivering. Another problem concerns the softening temperature of the glaze as compared to the burn out temperature of the carbon in the clay. Most clays and shales contain carbon and other materials which must be burned out before the ware surface is sealed.

The proposition of covering the surface with a glaze sometimes makes the burn out problem more serious.

For instance, a glaze which matures at 1850° may begin to fuse and seal the surface as low as 1500°. In some plants, the carbon may still be burning out at this temperature.

Just recently, Bob Stone* had a paper published in the "Ceramic Bulletin" which described the oxidation behavior of a Texas shale, and in which he showed the carbon was efficiently removed in the temperature range of 1400° to 1600°. This shale matures at a fairly low temperature and would require a low melting glaze. I would guess that it could not be glazed in a one-fire operation without blistering the glaze and black coring the body.

One Fire Glaze

In my own experience I know of only one red shale brick plant that has successfully glazed brick in a one-fire operation. This plant uses a tunnel kiln with a unique air recirculating system. The brick are brought up to about 1000° very quickly and then are taken very slowly to 1400°. The balance of the firing is done rather quickly, but in their long soak from 1000° to 1400° they have removed their carbon very successfully. Their peak temperature is only 1850°, but they have fired some comparatively soft glazes on their brick without a sign of a blister.

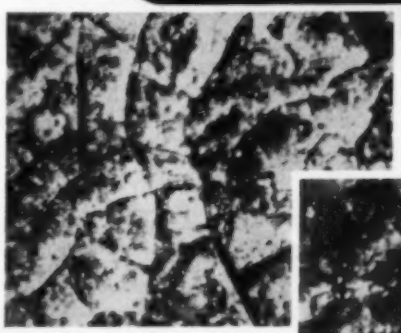
Practically all glazed brick and structural tile producers use a low grade fire clay which is matured at cone 3 to cone 8, and really have no great problem with getting carbon out before the glaze fuses. Probably one of the main reasons why there are no major producers of a single fire red shale glazed brick is our inability to make a suitable glossy glaze which will not seal the surface during the carbon burn out.

However, there are other coloring methods available to these people and they will be discussed next.

To Be Continued

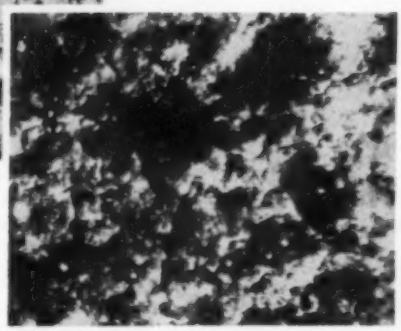
*Robert L. Stone, Laboratory Tests on the Oxidation Characteristics of a Texas Shale. Bulletin American Ceramic Society 36 (5) 172-173 (1957)

Compare these glazes



GLAZED WITH 100% SALT
BADLY CRAZED

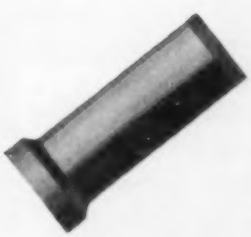
Here's proof of what a borate-salt mixture can do for your ware!



GLAZED WITH 10% BORATE—90% SALT

for a better glaze at less cost...

RASORITE® Sodium Borate Concentrates



Improve your salt glaze, lower your costs—it's easy with RASORITE! This product is cheaper than either Borax or Boric Acid, yet it gives equally fine results. Use RASORITE to make your glazes more durable, more impervious to liquids, more uniformly free of crazing. Get the benefits of a borate-salt mixture—in lowered fuel costs, increased production and profits. Write today for details and technical data sheets.

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United States Borax & Chemical Corporation

PACIFIC COAST BORAX COMPANY DIVISION

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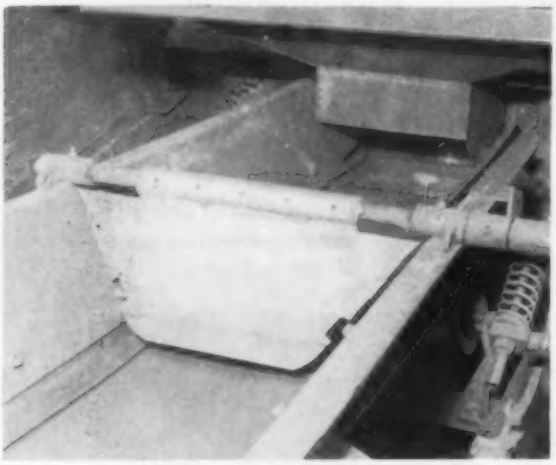
Trap Eliminates Rock Problems In Using Rubber Conveyor Belt



Where the aggregate plant operator is troubled by heavy stones, bits of brick, etc., falling back along a powered conveyor belt to shut off the flow from the feeding hoppers, a practical answer can be found in using a spring-loaded "trap," according to C. R. Eddy, sintering plant supervisor at Cinder Concrete Products Company in Denver, Colo.

Like many aggregate plants, Cinder Concrete Products uses a mixture of coke and coal in firing clay material for later conversion to lightweight aggregate blocks. Coke is fed to a 50 foot high hopper by means of a 110 foot rubber-belt conveyor, powered by a 6 horsepower motor, which picks up coke through a 6 foot hopper at the lower end of the conveyor and transports it directly into the hopper above.

Inasmuch as it isn't unusual for heavy pieces of ore, rock, and even bits of metal to become mixed with the coke, the plant was frequently troubled by discharge of these heavy, unwanted pieces onto the belt where they would travel a few feet up its surface and then roll back by gravity to the hopper outlet. Where exceptionally heavy or large lumps of ore were concerned, these were soon tumbling in the mouth of the hopper itself where, eventually, they would jam up the stream of coke dropping to the conveyor belt and require shutting down, while they were cleaned away.

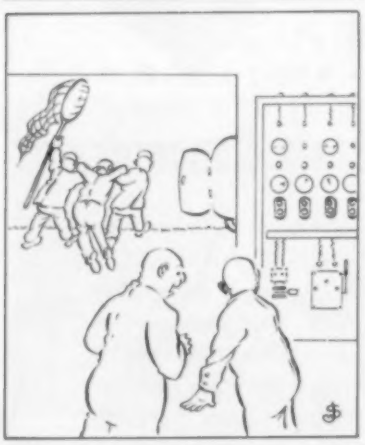
Plate Trap Designed

To do away with this problem, after some study, Eddy came up with a highly practical solution in the steel plate trap shown herewith. Mounted on a one inch bar which extends at 90° across the conveyor belt approximately five feet from the hopper outlet the metal plate is wedge-shaped, cut from half-inch steel plates and is spring-loaded by means of 2 inch coil spring, mounted at the right hand side of the conveyor belt.

Inasmuch as the steel plate is approximately 14 inches wide by 26 inches long, its lower edge exerts considerable leverage on the spring whenever a heavy chunk of iron or stone passes beneath. Thus, the plate offers almost no resistance to the passage of the heavy foreign substance, but inasmuch as a peg stop is mounted behind it, once having passed through they cannot roll back into the mouth of the hopper.

During coke-charging operations, the plant stationed one employee responsible for supervising the equipment near the track who then simply pushes the accumulation of unwanted stones and ore chunks off the belt to the side of the conveyor.

Now, with most of the coke chunks small enough to pass beneath the plate without striking it, and the spring-mounted plate returning in position to act as a dam against rolling back of any stones or ore chunks there has been no trouble whatsoever with "choking up" of the hopper outlet.



"Poor ol' Clete. After 27 years as a three-button man, they suddenly give him nine."

Jules C. Laegeler has been named chief engineer of the Frank G. Hough Co., Libertyville, Ill., according to executive vice president - engineering R. L. Beyerstedt.

Appointment of D. H. Mitchell as eastern sales manager for LeTourneau-Westinghouse Co. has been announced. He'll have charge of the eastern sales division.

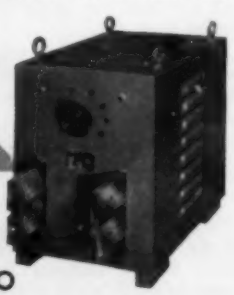
Is it worth 15¢ an hour to get rid of all the trouble you're having with blinded screens?

PROTECT CLAY PROFITS 3 WAYS WITH ELECTRICALLY HEATED SCREENS.

(1) You cut down on man-hours spent cleaning blinded screens. (2) Extend screen cloth life when you do away with pounding, brushing, flame heating, bouncing chains. (3) You stop recirculating of fines and wasted grinding time. An Ohio refractories plant where moisture content made steady operation impossible has put screening on a production basis with screen heating transformers. You will be money ahead, too. Write for bulletin 421.

any screen now in use can easily be equipped for efficient low-voltage resistance heating with

CONVERTA-SCREEN TRANSFORMER KITS



SCREEN HEATING *Transformers* INCORPORATED

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North State Pyro Installs New Lab for Better Control

For better control over raw materials and for development work in new refractory products, North State Pyrophyllite Co. has recently installed a complete, new research and control laboratory at the Greensboro, N. C. plant.

The lab is the culmination of more than three years of research by North State, carried on in conjunction with North Carolina State College of Mineral Research Labs, Asheville and with North Carolina State College.

The laboratory facilities will mean additional facilities for analysis, study and control of refractory raw materials in four categories: grain size, mineralogy, forming conditions, and firing conditions, according to Mason K. Banks, Economic Geologist.

Banks reports that for grain size work, a 4 x 6" lab jaw crusher, 10 x 6" crushing rolls, and a 9" diameter attrition mill were installed for reduction to any desired size range. The crushers were made by Morse Bros., Denver. Additional equipment for this work includes a U. S. Stoneware roller mill for fine grinding; a Ro-Tap screening device; use of automatic timers wherever practical to help standardize results.

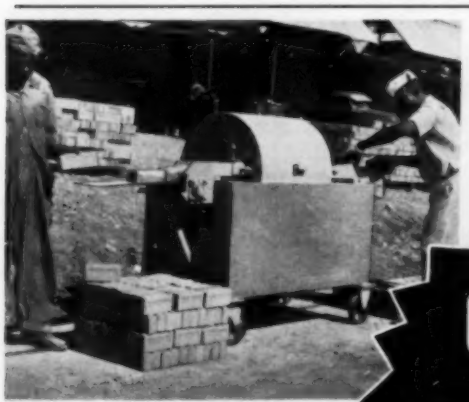
Banks also says that a batch testing unit designed for froth flotation investigations using Denver Equipment Co. equipment was included, with the purpose of investigation of the application of flotation to benefication of pyrophyllite ores.

Analytical balances, microscopes, and a hood for chemical and heavy liquid analyses were installed to determine mineralogy of the various ores and to secure better mineralogical blends.

A Simpson lab-size Mix-Muller and a lab extrusion machine have been in use for some time in study of forming. Technical staff men, Dan Stephens and Don Thompson, constructed two gas fired, automatically controlled muffle furnaces for firing of test bars. Minneapolis-Honeywell instrumentation is used on the kilns.

All of the new equipment, plus that of equipment in use for some time, will "complete a well-rounded laboratory installation for control and development of refractories," Banks reports.

Pictured above is partial view of new lab with North State men, from left, Mason Banks, Economic Geologist; Dan Stephens, research and development director; Willis Mock Jr., lab assistant; and Don Thompson, geologist and lab superintendent.



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SEND SAMPLES OF YOUR BRICK . . .
Let us put them through the ROCKFACER, and return them immediately. YOU judge the new profit possibilities this ROCKFACER offers. Prices and specifications on request.

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IN MINUTES . . . INSTEAD OF DAYS

Samples obtained from depths up to 100 feet with the all new

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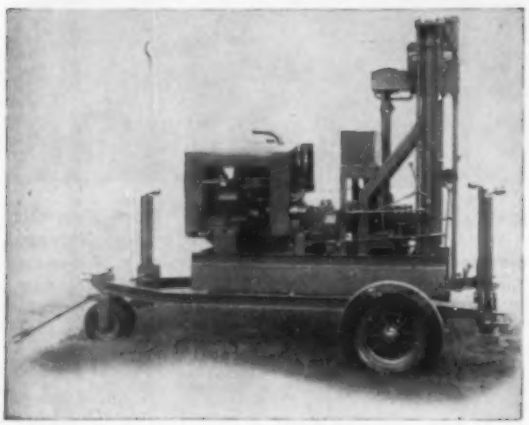

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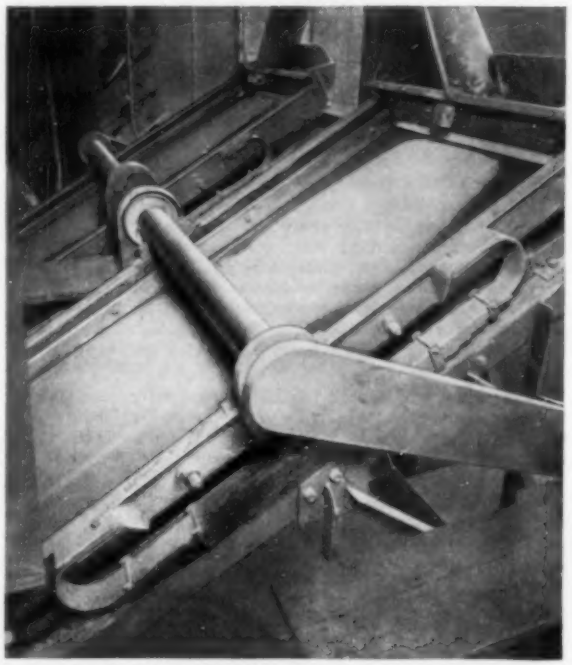
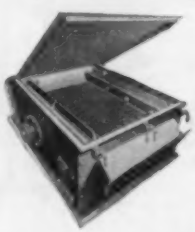


TWO LINK-BELT "UP" SCREENS accurately segregate oversize from raw and calcined fire clays at this firebrick plant.

Vigorous action of LINK-BELT "UP" vibrating screens sharply separates oversize from near mesh

WHEN small differences in material size make a big difference in product uniformity, put the problem up to Link-Belt "UP" vibrating screens. High-velocity action quickly stratifies the load . . . sizes closely through small screen openings without blinding.

High-intensity, circular motion is imparted by a simple, two-bearing vibrator that can be adjusted to the amplitude of highest effectiveness. Equally important, this mechanism is fully enclosed for protection from heat, moisture and abrasive dust.



FOR DUST-TIGHT OPERATION Link-Belt "UP" vibrating screens are available in semi- and totally-enclosed types to eliminate dirt nuisance and dust damage. See your nearest Link-Belt office—or write direct—for data Book 2377-A.

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COLOR MEET Continued

With this in mind he told the group that the acceptance of any color by the public depended on many uncontrolled factors. Colors tend to change under different conditions of light and orientation with other colors. Some hues are not acceptable to certain people because of mental associations. This unhappy association with some colors can become quite important when large numbers of people reject a color because of connotations with it.

Preferred Colors

The psychology department of the college was represented on the program by J. W. Wakeley who spoke on the psychology of color. Wakeley who is conducting research work in industrial psychology, was able to give to the meeting material concerning the effect of color on the human being. In his presentation, Wakeley was able to demonstrate the effect of color on the other apparent properties of any object.

The most preferred colors were discussed and a warning given that most preferred colors are not necessarily the colors to be used for any certain purpose. The normal color of any object has a great influence on the acceptability of other colors for the same object.

"Our Competitors Offer Color" was the title of a talk by W. C. Bell. Bell is director of the Industrial Experimental Program of North Carolina College. In this position he has been able to see the development of several new types of building material.

Among samples that he had, were concrete products utilizing North Carolina aggregate and white cements. Bell was most enthusiastic about a chip board now being produced in North Carolina. He suggested that this board could be covered with enameled steel or aluminum. This type of product could be made in any color and at costs below panels now being made. Also listed as potential competition to brick were: paper honey comb, plastics and foamed concrete panels.

Crystal Structure

Following lunch on Monday George O. Harrell spoke on "Crystal Structure and Color." Harrell suggested that the color of many oxides might be changed if the crystal structure of the material could be altered.

The ionic distances of particles making up different forms of a mineral depend on the elements involved and the lattice into which the ions are placed. The ionic distance determines, perhaps, the wave length of the light that is absorbed and therefore the color of object under observation. Models of crystal frames were shown as examples of different forms of the same chemical substance.

With the completion of his talk by Harrell the proceedings for the day were adjourned by H. B. Foster who had presided throughout the first day.

Coloring Methods

G. C. Robinson presided on the second day of the course. The first feature of the day was a paper by Harry L. Barker of the O. Hommel Co. Barker's paper, "Color in the Structural Clay Field," reviewed the methods that are being used in the industry to apply color. Considerable time was spent concerning the application of glazes to clay bodies.

Barker discussed problems inherent in the production of any glazed material. He stressed the importance of quality control by any plant that intends to glaze their ware. Use of engobe was suggested as a method that would eliminate some problems that occur with glazes.

Engobes are not without certain definite requirements when used, however. It was brought out that engobes must be fitted to the body to which it is applied. Barker told of

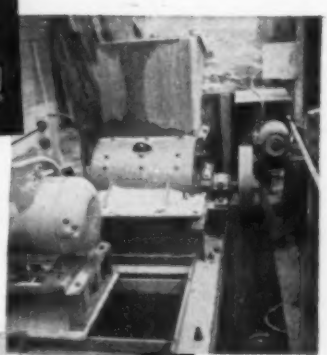
(Continued on page 91)

Holt Grace of Isenhour B&T

George Bishop of Columbia B&T

Reclaims 9 tons of Haydite Blocks per week

...PAYS FOR American HAMMERMILL IN 6 MONTHS!



This American Series 24 Hammermill is crushing culled Haydite blocks up to 12" x 8" x 16" to reusable 3/8" material. At the current market price of Haydite, this manufacturer paid for his American Hammermill in less than 6 months' operation.

Culled Haydite, Concrete or Cinder Blocks can be easily crushed to minus 3/8" material and mixed with new material. The resulting savings quickly pay for the cost of the equipment and give you a substantial profit thereafter, as well as eliminating the hauling away of culls.

WRITE for literature describing complete line of American Hammermills.

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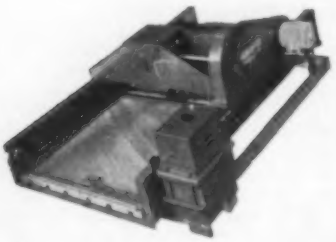

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THE DEISTER CONCENTRATOR COMPANY
The Original Deister Co., Est. 1906
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Payscraper Catalog

International Harvester has announced availability of a new 16-page catalog on its Payscraper line. The book includes photos, diagrams, cutaway drawings, and much other information. International Harvester Co., Chicago, Ill.

800/Circle on Reader's Service Coupon

V-Belt Manual

Dodge has released a separate V-belt drive manual that contains all information previously available in the company's full-line D-56 general Engineering catalog. Tables have been expanded to include more pre-engineered drives. Information includes selection and operation of belts; technical sections including tables of horsepower capacities, belt speeds, center distances, etc. Dodge Mfg. Corp., Mishawaka, Ind.

801/Circle on Reader's Service Coupon

Geared Couplings

A new book describing Link-Belt's complete line of improved geared flexible couplings has just been released. The book, 2775, contains 12 pages of information about applications, selection data, etc. Link-Belt Co., Chicago, Ill.

802/Circle on Reader's Service Coupon

Extremultus

A new catalog has been issued by Extremultus, manufacturer of a new type of power transmission belting made of polymer and chrome tanned leather. Extremultus, Inc., 405 Lexington Ave., New York 17.

803/Circle on Reader's Service Coupon

Tool Room Grinding

"Tool Room Grinding of Alloy, High-Speed, and Die Steels" is the title of a new 24-page brochure from the Bonded Abrasives Div. of Carborundum Co., Niagara Falls, N. Y. The book is designed to be a single source book on grinding for tool room men.

804/Circle on Reader's Service Coupon

OREFRACTION®
ZIRCON
GRANULAR & MILLED
for
• Refractory Shapes
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140, 200, 400 Mesh Sizes
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give you speed and control for

UNEQUALLED PRODUCTION!

Chem-o-sol is a special plastisol formulation, endowed with all properties required of the new plastic clay pipe joint. It assures optimum gasket performance, physically and chemically.

In addition, **chem-o-sol** is formulated to assure you of controlled high speed production, unequalled by any other plastisol formulation—or any other gasketing material whatsoever. Consistent handling properties and stability result from our big-scale production, up to 15,000 lbs. in a batch. Hence perfect gaskets flow smoothly from your line, and waste is practically eliminated. You can be sure of —

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Chem-o-sol is superlative gasketing because it originates in the world's largest plant of its kind, where continuing research keeps our product in the lead. Write for data or telephone GEneva 4-1770.

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KING PHILIP ROAD • EAST PROVIDENCE, R. I.
Member Vinyl Dispersions Division of The S.P.I.

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CUT ANY SPECIAL SIZE or SHAPE
ARCH-SKEW-KEY-WEDGE WITH THE ALL-NEW-

Clipper
"SAILS RIGHT THRU"

SUPERMATIC MASONRY SAW

with STA-LEVEL HEAD
and
HI-LO CONTROL WHEEL

NO ADJUSTMENTS TO MAKE
No Need to Turn Off Motor to Raise or Lower Cutting Head . . Ready to Cut at Any Height From 0" to 17" . . . No Levers or Knobs to Pull. No Gears, No Slides or Unnecessary Parts to Wear Out!

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. . . Clipper will name the Best Premium Quality Blade . . . Break - Resistant, Abrasive or Diamond, to give you the Fastest Cut . . . at the Lowest Cost . . . with the Greatest Ease . . . Anytime . . . Anywhere! Mail the coupon or call your Clipper Factory Trained Representative for Same Day Service!

Clipper also builds the famous **"Select-A-Notch"** Masonry Saw—the Saw that one man can adjust from his cutting position. priced from **$335**

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ADDRESS_____
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ENGINEERS Continued

When interviewing students, don't be blinded only by grades. If the man was good enough to get a degree, he must be worth something. Look more for the qualities you'll need. An engineer who's to be involved to some extent with promotion or sales will have to be a different type than a pure-research man.

Don't pass up opportunities in interviewing some of the students who, on the surface, aren't in your exact category. One type of student is in a gay daze of girls and football during college; despite this, he might be a very good worker, especially after marriage settles him down. A business major, with an engineering minor, might also have ability that you could well use. A lot of these men, many of them very good, will be overlooked by a recruiter who goes only by report cards and certain categories of courses.

One good point to remember is to be nice to all you interview. Even if the man is a hopeless dud, be polite. A reason for doing this is that this dud might have a good prospect as a friend; and a bad word from the dud might scare off the likely friend.

If you've got a good man working for you who's a graduate of the particular school you're aiming for, try to use him in some way. The professors may still remember him; he may even be able to use an acquaintance with some of the prospects. He might be able to give you tips on men to look for.

It might be wise to buy a few ads in college yearbooks or newspapers to both establish your reputation with the school and to get your company and industry better known.

There's quite a bit to the etiquette or courtesies of recruiting. If you'll work *through* the college, keep everything fair and aboveboard, keep an eye on all of your activities concerning the undergraduates, common sense should carry you through all right.

Be sure to play fair with the graduate if he takes your employment. It's no good to hire a man on false pretenses of duties or job importanec and then to have him leave in three months. Try to be sure he knows some of the less-favorable aspects of the job in case you think he might be discouraged in his early days of employment by some menial, temporary duties.

What Are Other Industries Doing?

All of these ideas above are not exclusive to our industry; they're well-known to others, some of whom have large-scale, full-time recruiting staffs.

Many other industries are working hard on recruiting. Their trade magazines are running similar articles to this one.

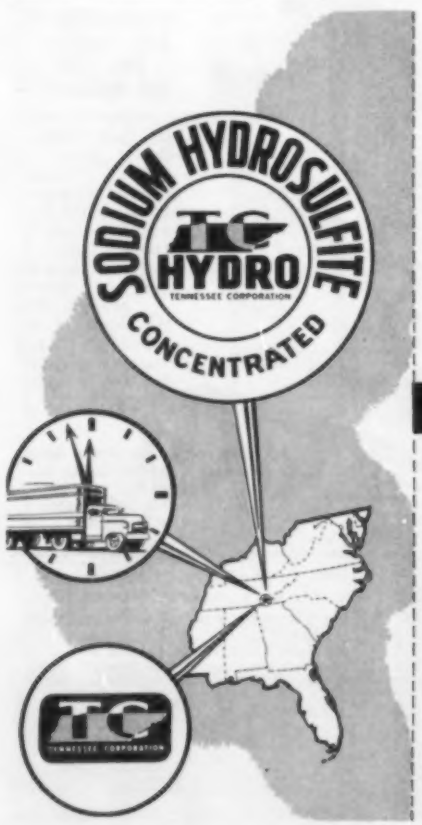
As one prime example of what's being done elsewhere, the magazine *Chemical & Engineering News* in their April 8, 1957 issue, devoted the entire issue to "Career Opportunities In the Chemical and Chemical Process Industries."

The first section of this issue covered such topics as the first few years of employment, to give prospective employees an idea of what to expect; gave tips to prospects on how to get and choose a job, etc.

The main section of the magazine then covered dozens of companies, breaking them down completely into their products, method of operation, laboratory or research facilities, plant location, and finally even the name of the personnel director and his address. Nearly 70 pages were devoted to this company listing. Evidently, we might point out, the individual companies themselves wrote their sections, with a recruiting pitch included either obviously or not so obviously.

Many companies go into publishing their own material, ranging from single sheets to quite extensive books, depending upon the size of budget available and the urgency of the need for engineering help.

(Continued on page 87)



TC HYDRO
TENNESSEE CORPORATION

As miners of Sulfur Bearing Ores, we are now producing another Basic Sulfur Chemical, **TC HYDRO** for the Southern Brick and Clay Industry.

SODIUM HYDROSULFITE
CONCENTRATED

HIGHEST QUALITY	FAST DELIVERY SERVICE	DEPENDABLE SUPPLY
TC HYDRO is a dry, white, free flowing, crystalline powder of uniform size and structure. It is dust-free, assuring highest stability and uniformity.	Our central location in the heart of the Southern Brick and Clay Industry, enables is to render over-night truckload service to most of the Brick and Clay plants in the South. Small lot shipments are available from centrally located warehouses.	Long a trusted source of Sulfuric Acid, Sulfur Dioxide, Organic Sulfonates and other Sulfur Chemicals, we have utilized our know-how and basic position in this field to produce another quality Sulfur Chemical for the brick and clay industry.

Phone, wire or write for literature and test samples if desired.

TENNESSEE TC CORPORATION

617-29 Grant Building, Atlanta, Georgia

ENGINEERS Continued

Companies vary in their personnel recruiting from a part-time duty of one executive to having a full-time, full-scale staff.

What About Our Industry

The refractories industry can work any and all of these possibilities, depending upon company size and budget available.

Taking some of the points, it'd be very wise to have professional help in putting out any literature you might use, or to use your TRI literature. An amateurish, cheap-looking booklet can have a detrimental effect.

To take part in the long-range recruitment, it's good to try to interest high school students in the industry. Encourage plant tours where feasible; use your men to speak at school assemblies or science classes; donate some modest amount of supplies for school laboratories.

Keep up with the literature available on careers, personnel and recruiting. This can cover all angles from books published on these topics to keeping an eye on college enrollment in your selected colleges.

Use Your Association

TRI members should fully use the facilities of this organization. At the Youngstown, Ohio meeting last winter there was an interesting and valuable talk on engineer recruiting by a college placement man.

TRI is currently holding a meeting at Ohio State University (to be reported on next month) in which considerable time will be devoted to various aspects of personnel management.

The TRI has put out an excellently done book on "Your Future In Refractories." In case you haven't seen it, this good-looking book talks to the prospective employee about the vital need for refractories in our economy; describes what the refractories industry is and what the jobs in it are; covers industry location and operation, and the future of the industry.

Very Important Book

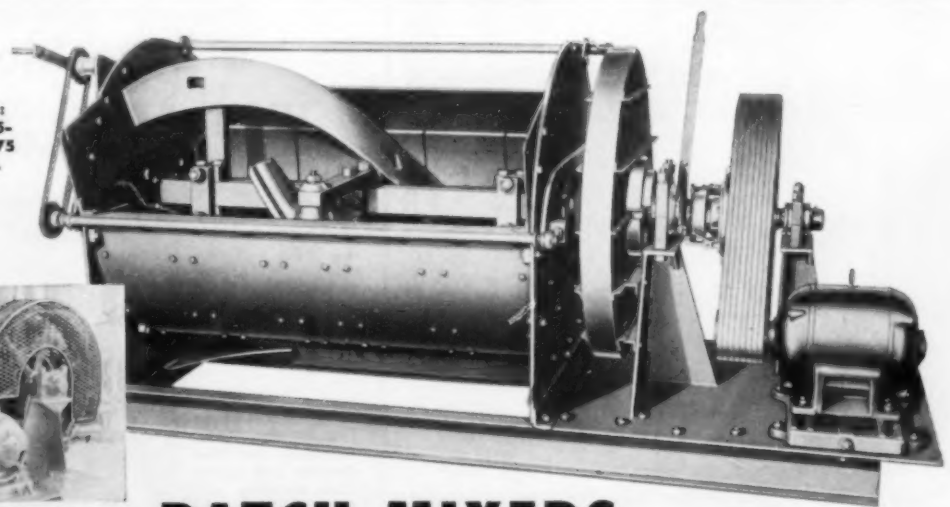
This is a very important book to the refractories industry, and it's very well suited to its purpose. One handicap of our industry, as far as recruiting goes, is the lack of general public knowledge of refractories, and similar resultant lack of any major interest in the industry.

As has been pointed out at the Youngstown meeting, not enough students know about the refractories industry, or even what refractories are. Only the students from refractories towns or areas are familiar with refractories.

This leaves a great need for public education as to refractories. It's a job that'll have to be done if there's to be a steady flow of talented, qualified employees as the industry grows and expands. Without these people, future progress in better quality and control, in more efficiency, will be nearly impossible.

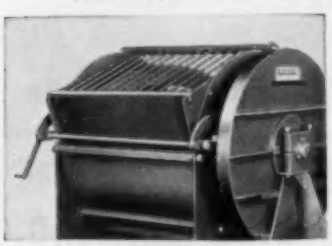
People More Important

Machinery in plants is being steadily improved, and it's much easier to correct the work of a machine than that of a man. In the years ahead, more and more the employee relations and securing of new employees will be an increasingly vital part of the job of all management men.



Capacities: 5-12-18-25-30-40-50-75 cubic feet.

Guard for mixer and pulley serves as an added safety precaution.



Drum grid cover permits quick charging with complete safety.

BATCH MIXERS Manufactured by the makers of the world-famous VIBRAPAC

• Besser Batch Mixers have long been regarded as the standard for the industry. Features include: Twin Spiral Blades made of Ni-Hard abrasion-resisting iron — Quick acting, air-operated discharge gate with strong cylinder action. Entire contents of mixer drum discharged in 15 to 20 sec. — Special alloy shafting ground on bearing surface to insure proper fit — Steel cut gears operate in a continuous oil bath — Reversible main gear made of special alloy steel, properly stress relieved and hardened to give extra long wear — Fully enclosed, anti-friction bearings assure smooth operation. Write for Bulletin No. 111A.

BESSER Company Box 139, Alpena, Mich., U. S. A.
Complete Equipment for Concrete Block Plants

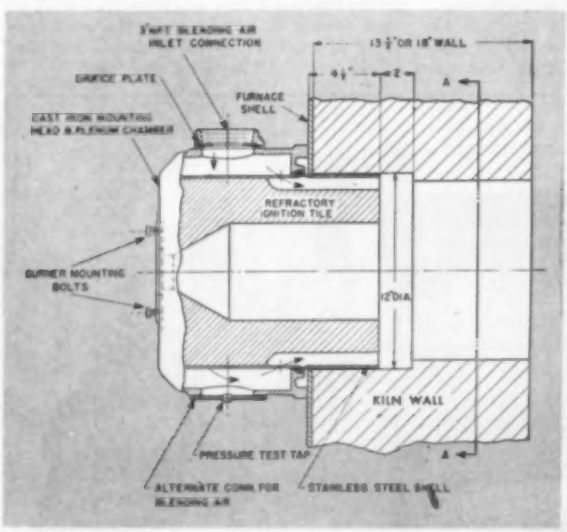
A7-118

in the Preheating Zones of Tunnel Kilns

HAUCK Blended Flame Units for Oil or Gas Firing with Excess Air

are the most effective means of obtaining . . . .

- ✓ *Required Temperature*
- ✓ *Improved Heat Circulation and Distribution*



A User Reports

"We have used these Units at our Lantz plant and found they work very nicely, as our brick check very easily on the ends. Therefore, these preheating units, admitting air around the burner block, are doing a very nice job."

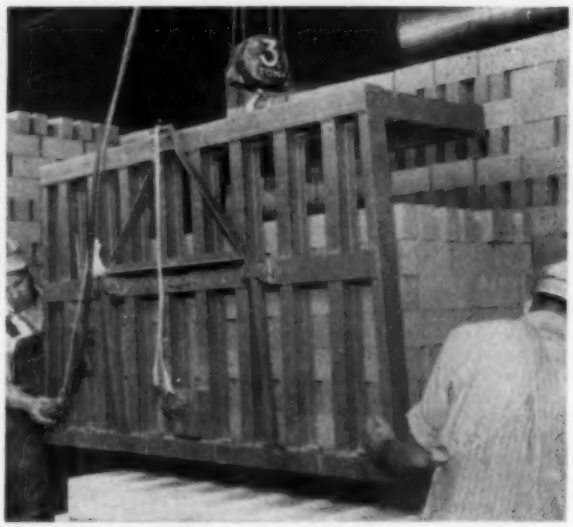
Installed on Various Makes of Tunnel Kilns

Quite a number of these Units are now in satisfactory service on Miller, Hendryx, Harrop, Allied Engineering, Robertson and other makes of tunnel kilns.

Write for Bulletin 417

HAUCK MANUFACTURING CO.
145-155 Tenth Street • Brooklyn 15, N. Y.

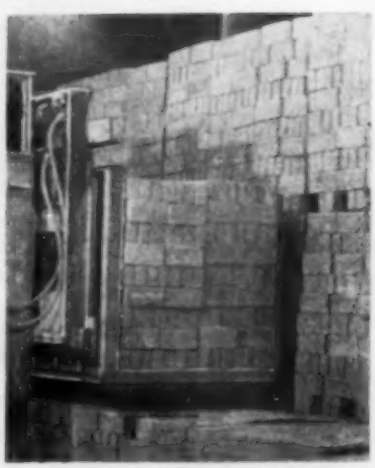
Make Brick Handling Easy . . .



PRIESTER Brick Forks

- **Save Time**
- **Save Money**
- **Save Labor**

Also Priester truck cranes for unloading from delivery trucks. Write for bulletin.



Brick in units of any size are handled by Priester Brick Forks. Automatic operation simplifies and speeds brick handling setting and drawing kilns, loading and unloading trucks and box cars.

Forks with flap grippers for cored and solid brick. Give service . . . take the hard work out of brick handling. Write today for more information.

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Middletown, New York

Pallet dryer car used at Beacon, N. Y. plant of General Builders Supply Co.

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FRITS and STAINS

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GLAZE FRITS and BODY, ENGOBE and GLAZE STAINS are made to meet all requirements . . . with wide firing range and stability at high fires. Laboratory controlled. Write or phone . . .

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Avoid costly injuries to the hands of your workers by giving them the protection they need—Tufhorse gloves, hand pads or mittens. Made of the finest cowhide, they are flexible and comfortable to wear.

ORDER SAMPLE PAIRS AT "PER-DOZEN" PRICES

Please send me samples of ✔

☐ Glove No. G-9 ($16.50 per dozen pairs)
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(All .O.B. Des Moines)

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performance proves our point!

POINT: *Mobile Drill's B-36* Hydraulic Vertical Auger *drills faster, more efficiently, at less expense than any other drilling unit of comparable weight and size on the market.*

PROOF: *Dozens of reports from satisfied users in contracting, prospecting, foundation testing and other soils engineering fields . . . testimonials that tell of time-saving, money-saving revelations with the B-36 MOBILE DRILL.*

here's why they're happy...

1 FULL 6' STROKE: Up to *twice the speed* of comparable drills because of fewer stops to add auger sections.

2 8,000 LBS. HYDRAULIC RAM FORCE: Drives to depths of 100' using 6" augers, up to 500' in an average day's work.

3 SEPARATE DRILL CLUTCH: Saves wear and tear on vehicle clutch, gives greater speed and ease of operation.

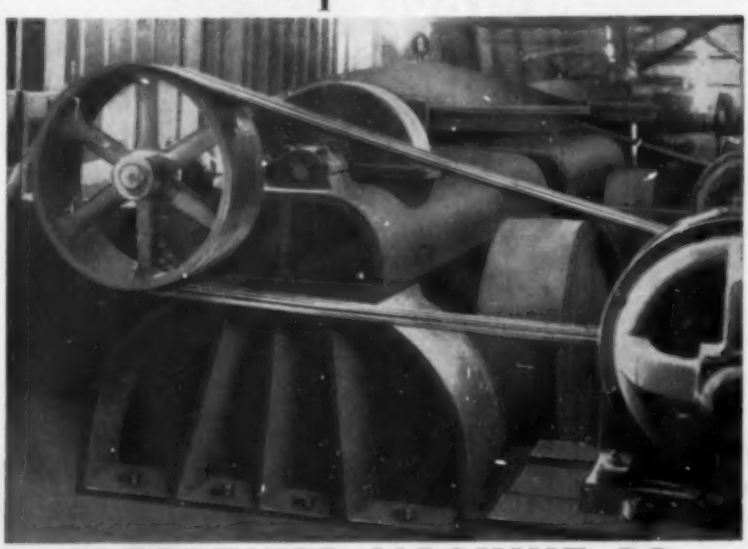
4 CENTRALIZED 1-MAN CONTROL PANEL: Eliminates waste motion, minimizes injury risk from moving parts.

PROVE IT FOR YOURSELF—TODAY!
Write for free illustrated folder and complete specifications on the B-36 MOBILE DRILL to:

MOBILE DRILL

Mobile Drilling, Inc.
Dept. 20, 960 N. Pennsylvania Street
Indianapolis 4, Indiana

The Clearfield MAXIMULLER is unequaled for *Low* Grinding Costs



The Maximuller, built in two sizes, No. 1 with 10 ft. diameter and No. 2 with 9 ft. diameter, represents a modern development of our standard dry pan design. It incorporates the same basic principles, that have proved their utility in meeting dry grinding requirements, as those of the heavy duty dry pans we have produced for many years. Among these features are the revolving pan with screen plates in the pan bottom and the large mullers, widely spaced for the greatest possible crushing effect. Though the operating principles are not new or revolutionary, certain design developments have enabled us to apply, with greater efficiency, our accumulated knowledge gained in over 75 years of constructing dry pan mullers. We believe the Clearfield Maximuller with its low maintenance and power consumption, is unequalled on the basis of cost per ton of product.

For complete description and specifications write for Bulletin B-53.

CLEARFIELD MACHINE CO.

Clearfield, Pennsylvania

Pacific Coast Representatives: Fernholtz Machinery Company
8468 Melrose Place, Los Angeles 46, Calif.

COLOR MEET Continued

the availability of prepared brick coatings that require very little development work in the plant of the brick maker. These brick coating are prepared so that they can be mixed with water and agitated with a propeller type mixer.

By mixing dark intense color with white coatings the light shades of any color can be secured. This allows a plant to produce a wide range of colors without having to maintain a large stock of colors.

In closing his part of the program Barker described the application of color to the face of brick with the use of colored sand. In this area it is worth noting that some manufacturers have for many years influenced the color of brick with the use of natural sands on the face of the brick. The sanding process can be applied to the stiff mud process by wetting the clay column as it comes from the brick machine. The spraying of the column makes the surface soft and sticky and the sand will adhere much better. The sand can be applied with a feeder and a roller to press it on the surface or a sand blasting method can be used. With the use of natural colored sands the range of colors was limited. Barker said that white sands are now being covered with stains and the limitation of colors has been overcome. All colors can be reproduced with the use of the new method.

The Engineering Research Department of N. C. State College was represented on the program by James T. Tanner. Tanner discussed "Colors for North Carolina Clays and Materials." An account of the development work that had been accomplished at the College was given.

The use of Northern Carolina ores to secure different colors was covered. The use of magnetite, chromite and titanium ores with two types of native clay was reviewed by the speaker. He suggested that any region might have ores or other material that could be used with the more usual raw materials. The cost of such material is usually low and the color potential is great.

The ancient process of terra sigallata was brought to the attention of the meeting by Holt B. Grace. In this method of color application clay is thoroughly ground in a ball bill and left to settle. The particles that remain in suspension are separated from the balance of the clay and used as a slip on the face of the clay body. The natural color of the terra sigallata will depend on the characteristics of the clay from which it is made. The coating can be sprayed, rolled or brushed on the ware. A ceramic bond is formed that adheres well to the body. By the proper selection of material desirable colors can be made. If a light terra sigallata is used the use of tinting colors is possible. In this case any color can be produced. The use of synthetic or natural frits make possible the production of unusual and attractive textures and colors.

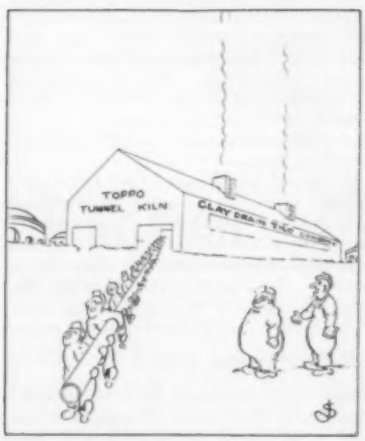
Use of Engobes

The final speaker to appear at the Tuesday session was Thomas D. Carnahan of the B. F. Drakenfeld and Co. His subject was engobes. Outlining the advantages of the engobe method, Carnahan suggested a program for a color system that could be used by most of the brick manufacturers. Taking advantage of the relative coarse surface of an engobe was one cost saving point made by the speaker.

He suggested that since feldspar, clay, flint, whiting, zinc, and lead bisilicate is available in 200 mesh size or finer, they do not require further grinding when used as part of an engobe mix. A high speed mixer would be able to prepare the raw material for use. As part of his presentation the speaker offered six formulas for engobes that could be applied to ware maturing from 1850° to 2200°.

The cost of the raw materials were described as low and with the addition of 3% pink stain the highest cost per thousand brick for engobe would be only $.54. The 3% addition of stain represented the maximum amount required for any color. Other colors would use less stain and the cost would be less. In closing, Carnahan touched

(Continued on page 92)



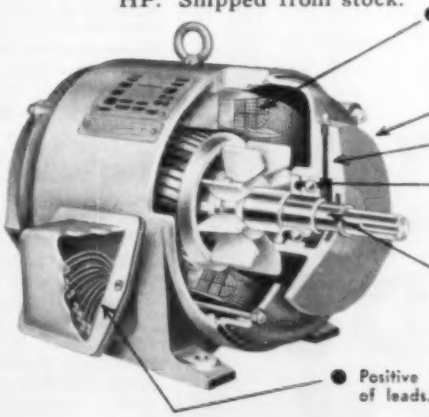
"Man! It's a good thing that new tunnel kiln ain't any longer!"

Wisconsin Fork Lift Truck & Crane Co. has opened a north division branch at Neenah, Wisc., for selling and servicing **Allis-Chalmers** lift trucks. Their territory will extend from Fond du Lac north to the Upper Michigan peninsula and west to Minnesota.

R. L. Beyerstedt, executive vice-president of **Frank G. Hough Co.**, Libertyville, Ill., announced the appointment of T. G. Granryd as manager of the Product Improvement department.

STAMINA of BROOK A.C. MOTORS is no coincidence!

Design is based on over half a century of experience. Built to surpass NEMA Specifications, yet cost no more than ordinary motors. Single and polyphase. All major types. 1 to 600 HP. Shipped from stock.



- Long-life windings are triple impregnated and baked.
- Internally-ribbed, shock resistant iron frame.
- Generous bearing lubrication capacity.
- Bearings two sizes larger than customary; yet, still replaceable from any standard bearing stock.
- High tensile steel, precision ground shaft and balanced rotor assembly.
- Positive identification of leads.

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SINCE 1904

BROOK MOTOR CORPORATION

Factory Representative, Warehouses, Dealers, Service Stations, in Major Cities.

on the mixing of engobes with sand. The addition of 5% engobe with sand was suggested as a mix which would give a good color density to a natural sand. The method of application of the sand and engobe mix could be the same as sand alone.

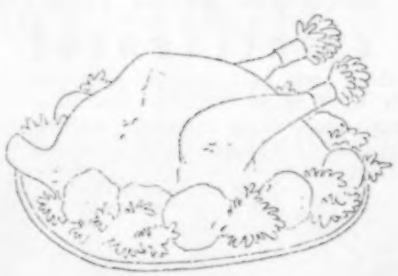
All speakers stressed the probability of color variation when using ceramic stains. Since such variation is inherent in the processes the suggestion was made that all production be offered with the understanding that variation will occur in the material. Since some of the value of brick masonry is the normal variation of individual units, this feature should be seized as a sales point in the promotion of colored units. The application of all coatings over a textured surface was suggested as one way to reduce the number of rejects. With textures, small chips are not as serious as when they appear on smooth faces. This is true of uncolored as well as colored brick.

Any attempt to make perfect material will result in costs so high that the manufacturer will find himself competing price-wise with premium quality material now on the market.

The second day of the course was finished with an evening banquet at the Sir Walter Hotel in downtown Raleigh.

Color Techniques

The first two speakers Wednesday told of techniques used in their own plants to secure highly acceptable colors and textures. Frank Todd of Moland-Drysdale explained the methods by which his company mixes a great many different clays to control color. Moland-Drysdale has a periodic kiln plant and a tunnel kiln plant at Hendersonville, North Carolina. Several kinds of clay have been prospected on a single 210 acre tract belonging to the company. The clays are mined and stock piled separately and when a production order comes in the proper blend of clays is made by the operator of a front end loader.



IF YOU WANT
HOT BUSINESS
LEADS
SERVED UP
ON A PLATTER
SEE PAGE 28

The required amount of each clay is placed in a pile and the front end loader is used to pick up and turn the pile before the mixture is placed into the feed hopper. Starting in 1949 with a red brick the company has been able to exploit its clay deposits and now produces light buff, pink, grey, brown and sanded brick.

Sanded Textures

George Bishop of Columbia Brick & Tile of Columbia, South Carolina had samples of sanded textures now being produced by his company. In a short time the demand for this material has increased until 50% of production is the new type of sand finish. Actually the term sand is a misnomer as clay is used in the preparation of a mixture that is applied to the brick in the rolled sand method.

Columbia Brick is using a large number of natural-occurring shales, clays and sands in its locality to make a number of "sands" that have different colors. The only stain that is purchased by the company is a green stain. The range of their colors is from white to black with a number of pleasing neutral hues.

For some of the colors actual sand is mixed with the rest of the mix to control color and to conserve on the use of certain scarce clays. The application of the "sand" is made to a moistened and scarified column. After being scattered the "sand" is rolled. The brick can be handled in the normal manner with no extra care required in the following processes. The maturing point of the "sand" must be designed to fit the maturing point of the body. The resulting finish is reasonably durable.

Bishop estimated that 150 pounds of the "sand" is required to surface 1,000 brick. However the use of the "sand" could be reduced if its cost justified the use of salvaging operations.

Mortar Color

Fourteen percent of every brick wall is mortar. The effect of mortar color on the appearance of a building was the subject covered by Percy L. Rogers. Rogers is an engineer for Riverton Lime and Stone Company who are specialists in the utilization of color with masonry cements.

The type of material used for coloring mortar was discussed. The conditions under which mortar color might be required by a job was outlined as a case of matching old work, a condition in which the mortar should blend with the brick and a condition in which the mortar should contrast with the brick. Effects of erosion and efflorescence on mortars was discussed by Rogers.

The manner in which firing conditions affect color was covered by G. C. Robinson from the Ceramic Engineering Department of Clemson College. Metals like iron, titanium and manganese are the controllers of color in brick. The kind of oxide involved and the combinations into which they are grouped influence the final shades. Further the grain size of the particles together with the firing time and the temperature curve have major effects on the color.

Weather Testing

The meeting was closed with a session on weather testing of brick. R. R. Bowser of the Bowser-Morner Testing Laboratories suggested a series of tests that any face brick should be subjected to before it was offered to the market. In addition to the normal tests for the ASTM ratings, brick with applied colors should be expected to stand up under tests pioneered in other fields. The use of a fadeometer will test the fastness of the color. A weatherometer will, by greatly accelerating cycles of different conditions predict the amount of weather that any given brick will withstand. There are tests available which will give a quantitative value to the question of how much resistance the material under study has to abrasion.

Bowser said that he felt it was important that the qualities of low maintenance and durability be maintained in any color development of clay products. As the time element can be important for preliminary work, a salt test that can be used as a substitute of a 50 cycle freezing and thawing test was described by this speaker. In this test five cycles of the salt test is approximately equal to the much longer 50 cycle freezing test.

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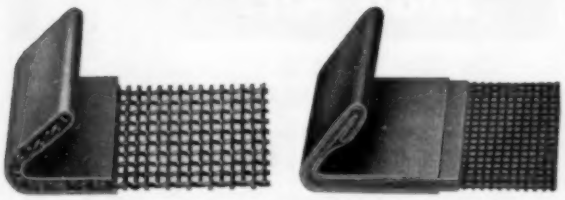

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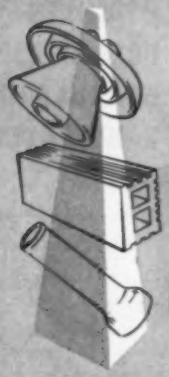

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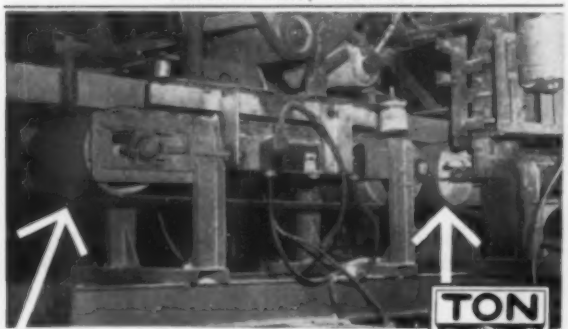

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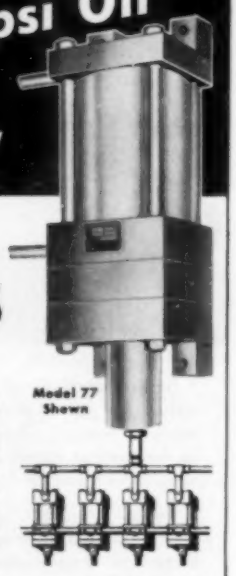

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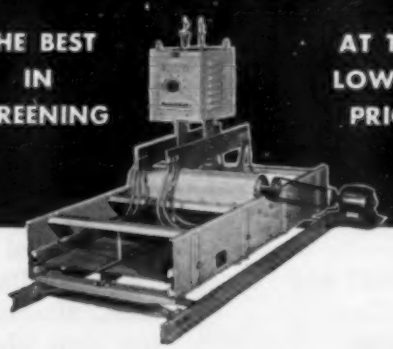

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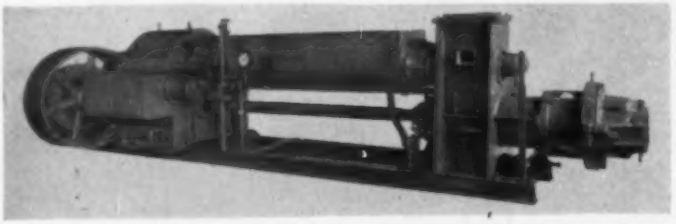

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New and Used
CLAY WORKING MACHINERY

5028 Alhambra Ave., Los Angeles 32, Calif.
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DO YOU HAVE TUNNEL KILN PROBLEMS?

Hearts - Overfiring, Underfiring, Air Checking Loss of Production due to slow schedule, etc. With years of experience on all makes of tunnel kilns we can help solve the above problems.
Contact
Tunnel Kiln Consultants
Dept. 9ZD
Brick and Clay Record
5 South Wabash Ave.
Chicago 3, Illinois

MACHINERY BARGAINS

DRY PRESS Boyd Model BB including 10 H.P. Motor and Drive.

COMBINED MACHINE STEEL No. 5, Steele and American De-Airing Combined Machines. International 470.

BRICK CUTTERS Steele and Freese Automatic.

SEWER PIPE PRESSES Pearne Lacy Hydraulic including dies 6 to 15", Tappin Rice including dies 8 to 24".

FERNHOLTZ MACHINERY CO.
8468 B Melrose Place
Los Angeles 46, California

A Note to Owners Of American Clay Machines

It doesn't pay to gamble on make-do replacement parts for your American equipment. Genuine American parts usually cost no more and they assure you top results and long life because they are cast from original patterns of the right materials. Extensive stocks at American mean quick delivery on most parts. Order now from American Clay Machinery, Division of Huber-Warco Co., Marion, Ohio. WARNING: Genuine American parts are available only from American Clay Machinery.

WHAT'S IN YOUR CLAY—Do you know what clay minerals make up your clay or shale? Are carbonates, pyrite, carbonaceous matter, or other impurities also present? At what temperature is the chemical water driven off? All this valuable information—and more—can be obtained from a DIFFERENTIAL THERMAL ANALYSIS of your clay or shale. Send a one-ounce sample for immediate analysis, costs only $15. Ardmore Laboratory, 22 Morris Place, Oceanport, N. J.

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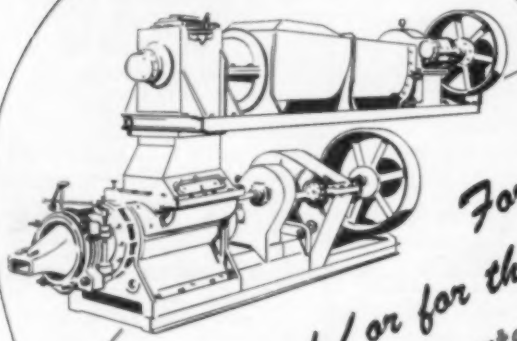
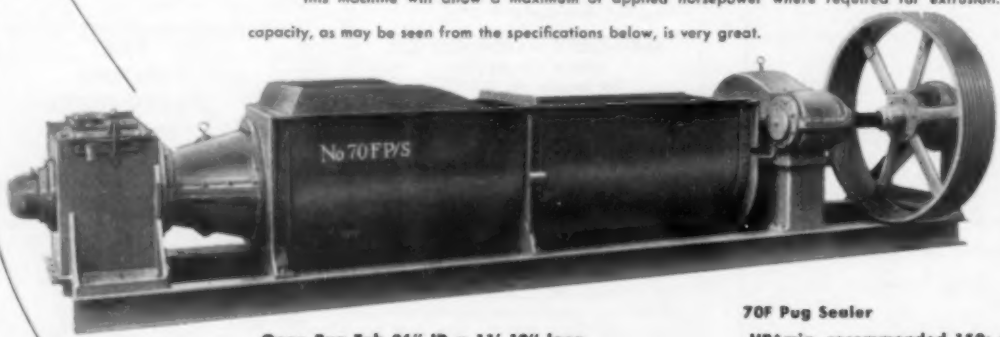


For the greatest capacity and/or for the toughest possible column

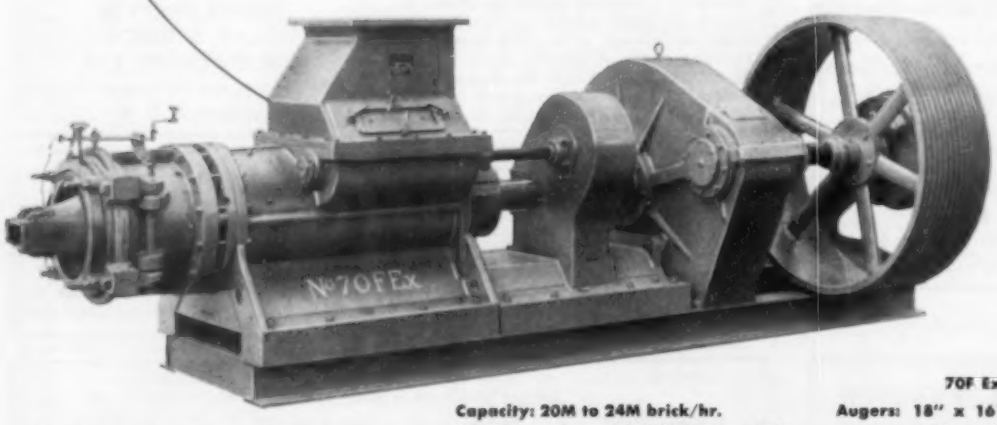
No. 70 Separate Drive Deairing Machine

These days it is not unusual to find a plant where the requirements of capacity or toughness of column (due perhaps to kiln requirements or nature of the material) are far beyond the ordinary. For these plants we offer the No. 70F Machine. All of the well known advantages of separate drive operation are inherent, and in addition this machine will allow a maximum of applied horsepower where required for extrusion. Pugging capacity, as may be seen from the specifications below, is very great.



Open Pug Tub 36" ID x 11' 10" long, a total of 94 cu. ft.; 3.5 cu. yds.

70F Pug Sealer
HP*min. recommended 150; max. 200
Weight: 17,700 lbs.



Capacity: 20M to 24M brick/hr.
HP*min. recommended 200; max. 250

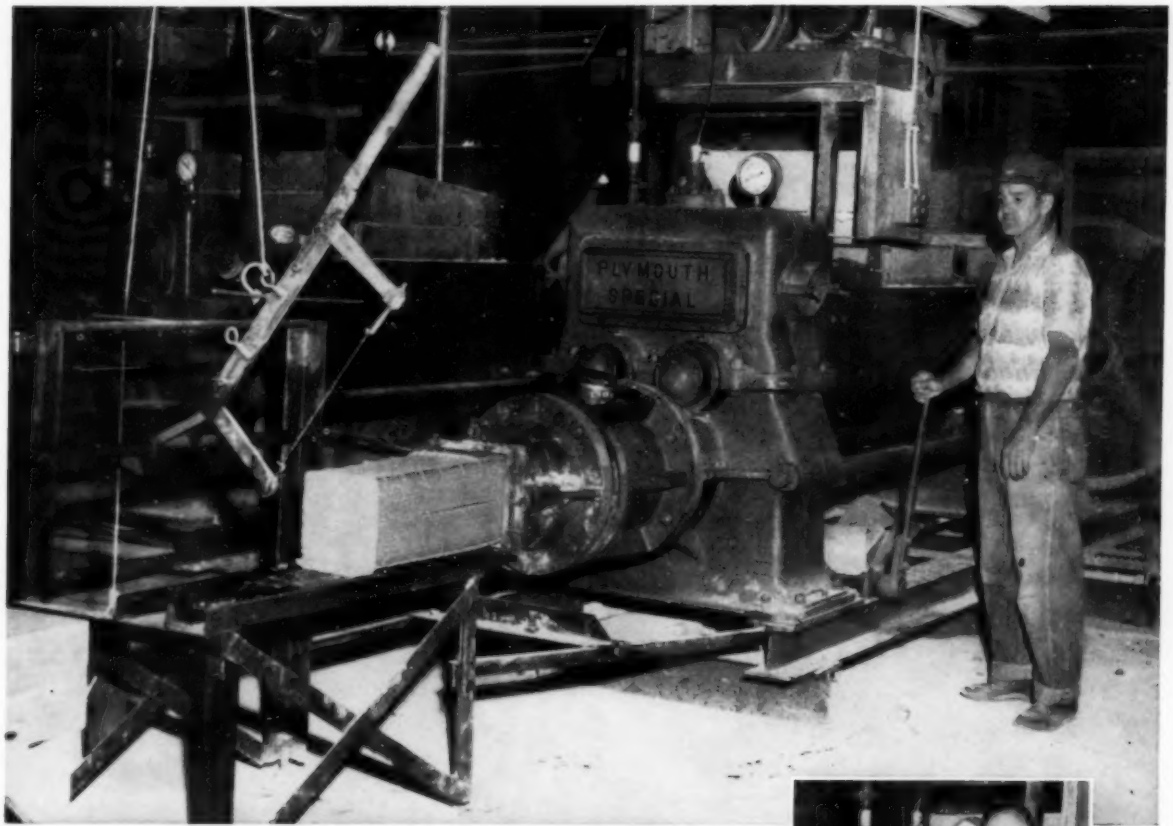
70F Extruder
Augers: 18" x 16½" tile type or 18" x 14" brick type.
Weight: 24,600 lbs.

Pacific Agents: Walter C. Stoll, 5028 Alhambra Ave., Los Angeles 32, Calif.

J. C. Steele & SONS, Statesville, N. C.

• THE BEST IN CLAY MACHINERY SINCE 1889 •

*Actual combined HP of these two units will run from 10 to 17 HP per M brick/hr. depending on nature of material, its moisture content, and extrusion rate. We will be glad to give you complete information on this equipment.



"F-R-H Plymouth Specials have REDUCED LOSSES 5%

Reports New Castle Refractories Co., Newell, W. Va.

"We have reduced drying and firing losses at least 5% with our Plymouth Specials which replaced machines that did not offer the de-airing principle," states Plant Manager Larry Sixt. "By eliminating 'variables' they have greatly improved the quality of our product. We are completely satisfied with the performance of our F-R-H equipment which gives us uniform extrusions every time."

The two Plymouth Specials pictured above are employed in the manufacture of high quality kiln furniture. The combination De-airing Extrusion Machines extrude blanks which are then pressed into the desired shapes hydraulically.

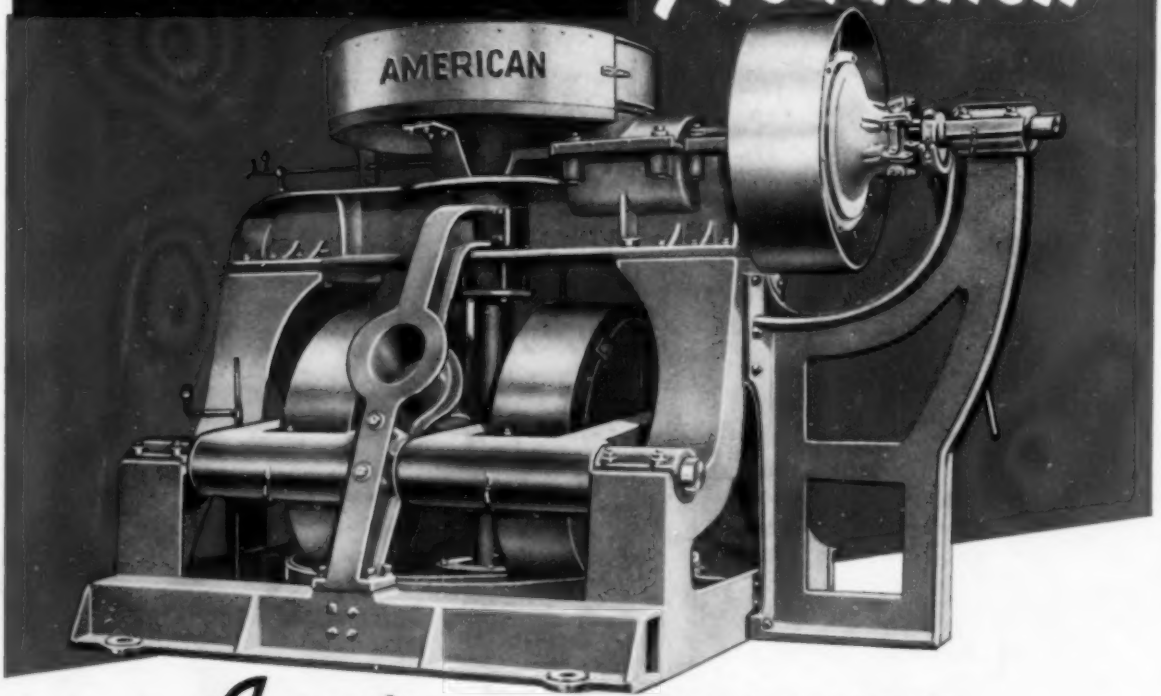
F-R-H Ceramic Machinery can reduce *your* operating cost and improve *your* profit picture. For a free analysis of your needs, send a brief outline of your plant operations to The Fate-Root-Heath Company, Dept. B-1, Plymouth, Ohio.

F-R-H

CERAMIC MACHINERY

FOR 100% OPERATING EFFICIENCY—ORDER GENUINE F-R-H REPLACEMENT PARTS DIRECTLY FROM THE FACTORY.

A TON A MINUTE *Production*



American NO. 384 GRINDER

For big capacity grinding at low cost, experienced clay production men consistently choose the "American" No. 384 Grinder, capable of producing A TON A MINUTE capacity.

This grinder, with its big tonnage volume, requires only a minimum of plant space, low initial investment, less power consumption and performs efficiently and dependably with only a minimum of maintenance.

The "American" No. 384 Grinder will efficiently handle hard clay, shale and other similar material used in the manufacture of brick and other clay products. These materials are handled wet or dry, and there are no screen plates to clog and slow down production.

"American" offers a complete line of grinders. In this line are eight sizes to meet all varying plant requirements. Capacity of these grinders ranges from 15 to 80 tons per hour.

If you're considering the installation of real clay production equipment, choose "American" Clay Machinery. For a profitable, non-obligating consultation, write, wire or phone the "American Clay Specialist". Take advantage of his many years of experience.

Look to *American* For these

CLAY MACHINES

Extruding Machines	Auger Brick Machines
Dry Pans	Automatic Cutting Tables
Grinders	Crushers & Desintegrators
Pug Mills	De-Airing Equipment
Represses	Roofing Tile Machinery
Wet Pans	Conveyors & Elevators

and such accessory items as dies, screens, barrows, trucks, clay cars, winding drums.

American CLAY MACHINERY

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